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**ECONOMIC AND INDUSTRIAL AFFAIRS**

**No. 1917**



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25 July 1979

# EAST EUROPE REPORT

## ECONOMIC AND INDUSTRIAL AFFAIRS

No. 1917

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EUROPEAN ENERGY SITUATION EXAMINED

Budapest FIGYELO in Hungarian No 24, 13 Jun 79 p 3

[Article by Jozsef Bogнар: "The European Energy Situation"]

[Text] One of the most significant problems of the world economy in the coming decades will be to keep the balance between energy sources and demand. In assessing the European energy situation, I side with those who expect a worsening of the crisis in the next decade. For the expected crisis coincides with numerous developments and processes, each and every component of which by itself putting a significant strain on the world's economic systems.

I shall mention these developments and processes only very briefly:

--A 70-80 million increase in the world's population may be reckoned with in the next decades. In order to achieve full employment, several hundreds of thousand (according to some, 1 billion) new jobs will be needed.

--The growing uncertainties and control of the international political situation are becoming more difficult. Political, security and economic questions are not integrated.

--The world economic system is weak in that its extremely sensitive and interdependent relations are influenced by systems of action which--like the 170 national economies and the international undertakings--make it difficult for them to deviate from their own short-range value systems.

--A transition is taking place from the social economics of the industrial revolution to the new science of economics. The latter must start from the limits of natural resources and air and water pollution (the free resources in classical economic science), and must support the variations of development which entail, not only relatively (compared with results), but also absolutely, less danger and have less negative effects. Until now it was said that these (i.e., the negative effects and natural and social dangers)

are the "price of development." Regardless of whether these statements are right or wrong with reference to the past, we cannot pay this price in the future.

### The Sources

With this short outline of the circumstances in world economy and world politics, we only tried to show how much need exists for future cooperation which will or may be effected in order to solve the problems and, furthermore, what new factors and dangers we must face in the course of accepting or rejecting the necessity of cooperation.

In the course of assessing the European energy situation, we must, however, start from several concrete factors. Eastern Europe is not only autarkic but also exports energy. When East European and Siberian energy sources are sufficiently developed, there will be a possibility to maintain this role that is based on the Soviet Union and Poland. It is evident that the specific utilization of energy must be substantially decreased in the European socialist countries as well, and energy consumption must be rationalized on a large scale.

Structural change (reform) in the economies of these countries had a dynamic start. This change also serves the modernization of energy utilization.

It is also evident, however, that these countries do not have enough capital to make it possible to develop in one step (in an identical econopolitical period) the production of finished goods--which is also needed for increasing exports--and to vigorously develop natural resources. It is also indisputable that they urgently need cooperation in raw-material production (energy-source production) and in the technology developed, or to be developed, in the area of utilization.

Western Europe is, however, an area poor in natural resources and it does not even have enough space for nuclear plants. Consequently, it is an importer not only at present but will remain so in the future as well. The United States and Japan are also importers but the former still has significant reserves both in production and consumption.

The bulk of Western Europe's oil imports originates from the Near East. Every sign indicates that the Near East will remain in the coming decades one of the centers of protracted struggle in world politics. However, the extreme political sensitivity of the Near East is not limited to the international situation but is also related to its inner sociopolitical structure. This circumstance is the result not only of the characteristic relationship between international and internal factors (conflicts between individual nations and Arab policies which transfer the differences between radical and conservative power centers into internal politics as well), but also of the fact that the inner structures of developing nations contain such

contradictory elements as to make a change in the inner power structure very possible. (Events in Iran and their expected effects on the oil supply.)

#### Political and Economical Factors

It is evident that, under the circumstances mentioned--in view of the extraordinary significance of the energy question in shaping the future--there is a great need and are many possibilities for the realization of cooperation between East and West. For each side needs something to improve its own situation that the other side has in greater quantities.

We must not delay any action, for the international energy situation is grave and the crisis--and its impact on Europe--could be lessened by adequate cooperation. But both sides must make a step in another direction if the other side does not indicate enough willingness.

For it is evident, especially with regard to Siberian resources, that their exploitation is possible, and not only in the interest of European economic cooperation.

However, large-scale cooperation (the securing and exploiting of resources and transport systems, the practice of concrete cooperation, and mobilization of certain scientific capacities, etc.) creates a strong "mutual dependence" between the two parties and the development of such a situation necessitates new decisions in policies and security.

The new decisions must be realized in an integrated system (decisions weighing the total and individual effects of political, security and economic factors), the necessity of which has been dealt with in numerous essays. We must compare the dangers in classical national security with those of economics. For we must realize that a world economy

- a. whose development has slowed down while 70-80 million more people must be supported annually,
- b. which has become sensitive and interdependent to a degree previously unheard of,
- c. whose conditions have become outdated without suitable new ones to replace them in a short time,
- d. which is struggling with the limits of natural resources,
- e. which finances armaments amounting to \$400 million annually, to balance mutual determent, may easily collapse.



## The Necessity of a Breakthrough

The energy problem is especially suitable to show the dangers and possibilities mentioned, for it is one of the foundations of economic development. But its significance is also decisive in the sphere of security, both in the development and employment of new techniques of warfare.

From this it follows that this sector yields the best possibilities for new kinds of decisions, and for the recognition of the significance of cooperation--or the great dangers inherent in a lack of cooperation--in other words, for a breakthrough.

The breakthrough, or new decisions, would affect all areas of East-West economic relations and European cooperation. Not only because the energy problem affects all kinds of production and consumption but also because it could serve as a precedent; for if cooperation and mutual help can be realized in this area--which is closely related to war production and to the moving of war machinery--then this will be much easier in other areas that are less sensitive from the standpoint of security. A breakthrough is needed because the loss of time is extremely dangerous.

### Three Requirements

I would like, finally, to refer to three requirements.

1. To the "strengthening" of the economists' opinions because some of them are still reassuring themselves, the public and the political leaders. The latter two can see the dangers inherent in the present situation of the world economy only if these are openly unveiled to them together with their consequences.
2. The multiplying greater or smaller political conflicts, the risks they create and their psychological effects (fear and relief) divert the attention at present from economic dangers. For this reason, mechanisms and gears are needed which show the political leaders and the public the real extent and kind of economic dangers.
3. The present situation of the world economy cannot withstand the mechanism of developing, strengthening and alleviating conflicts which in a stressful situation automatically shuts down the machinery of economic cooperation. Consequently, the grave problems in the world economy should be identified and their solutions should be sought cooperatively in the future, too, in order to avoid a later collapse (explosion) of the economy.

In my opinion, such problems should be dealt with in Madrid--in the course of continuing the Helsinki conference--and then within the framework of a pan-European economic conference that the Soviet Union has proposed, in a comprehensive way pointing ahead. Helsinki (the conference on European

cooperation) concentrated the largest energies on the one hand, on political and security questions and, for different reasons, on the so-called "third basket." With reference to the economy, however, it has only rather summarized the results achieved instead of feeling out the future.

At present, however, those elements of a beginning of a new era in the world economy are unfolding, which create a fundamentally new and dangerous situation, full of risks, in the economy of the world.

What is needed today in the cooperation of the East and West is not only to eliminate the passive and active remnants of the Cold War but also to accept and realize the idea of "mutual economic dependence." For the rejection of the postulates of "interdependence" may result in rushing our own economies, as well as those of the developing world and the world economy struggling with extremely complex problems, into grave dangers. For the condition and system of the world economy, manifested in the beginning of a new era in the world economy, are so sensitive and vulnerable that they can no longer bear without shocks the activities of Cold War or unilateral decisions arising from a lack of cooperation.

In the era of "economic interdependence," however, it is not enough to remove existing obstacles in commerce and economic cooperation. For in the new situation of the world economy, there are new areas and possibilities in cooperation. According to the nature of things, the new elements signify the dynamics of cooperation. But only a dynamic cooperation may become successful, one that enhances the solution of new, mutual and significant problems.

The political decision which would accept and implement the idea of "mutual economic dependence" and would concentrate on future problems, would be in accordance with the requirements of the new era and it could begin a new chapter in the cooperation of East and West.

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## SWITCH TO SEMICONDUCTORS IN RAILROAD CONVERTERS REPORTED COMPLETE

Prague ZELEZNICNI TECHNIKA in Czech No 1, 1979 pp 10-13

[Article by Eng Jiri Rydlo, Federal Ministry of Transportation: "Complete Semiconductor Operations in CSD Converters"]

[Text] On 15 December 1978 all mercury rectifiers in converters of the Czechoslovak State Railroads [CSD] were completely replaced with semiconductor silicon rectifiers. Since 1 January 1979 electrified railroad lines in the direct current traction system have been fed by almost 250 semiconductor silicone traction rectifiers representing about 40,000 silicon valves-diodes.

The application of heavy-current electrical engineering introduced by the Elektrotechnika plant of the Ceskomoravská-Kolben-Danek enterprise in Prague in agreement with the Ministry of Transportation began in 1964 in the electrical engineering branch of the CSD with the introduction of 3,300 V tension in semiconductor branches composed of a chain of silicon diodes where the number of diodes in series connection had been gradually reduced from 10 to 7. The diode chain was stressed in the direction reverse to the trolley tension, which tested voltage resistance of the silicon diodes to overvoltage which may penetrate into converters from the traction system. These tests continued for several months and after their evaluation short-circuit tests followed in mercury rectifiers operating in the CSD (in connection in a double three-phase bridge and in a six-phase direct contact with neutral choke). The result of the tests served as a basis for the subsequent construction design of 3,300 V silicon rectifiers used in CSD converters for power feeding of the traction system. When planning the construction design, the workers of the Elektrotechnika plant of the Ceskomoravská-Kolben-Danek were required to respect the conformity of the semiconductor rectifier with the silicon rectifiers.

The Elektrotechnika plant of the Ceskomoravská-Kolben-Danek in Prague produced in 1965 the first two models of rectifiers for the 300 V converters in CSD, namely, one rectifier with a bridge connection, the other for direct connection. The VK 150/5 type of diode was used in both models of rectifiers, and the rectifiers were adapted for 100 A current with an overload capacity of the track which requires a 150-percent overload over a

period of 2 hours and 200-percent overload for a period of 1 minute. The rectifiers used silicon valves with forced air cooling in 324 units (the branch for direct connection consisted of 18 valves in a series and 3 parallel valves; the branch for bridge connection consisted of 9 valves in a series and of 3 parallel valves).

In agreement with the workers of the Ministry of Transportation, the first model of semiconductor rectifiers was put into operation in the converter in Trnavka in the Northwest Railroad administrative area early in February 1966, and the other model in the converter in Strba in the Eastern Railroad administrative area in late May 1966.

The following years, 1967 and 1968, may be regarded as the beginning of gradual construction of semiconductor silicon rectifiers in the Tatry electric railroad in the Vysoke Tatry Mountains where the tension of the rectifiers is 1,500 V. The workers of the department of electrical engineering of the Eastern Railroad demonstrated a positive approach to the implementation of heavy-current electronics, which was an important step for the manufacturing plant, the Elektrotechnika fo the Ceskomoravska-Kolben-Danek, as well as for the CSR because the feasibility of replacing mercury rectifiers with silicon rectifiers proved to be realistic.

The workers of the department of electrical engineering in the Central Railroad administrative area displayed initiative in reconstructing the URA 603 model of mercury rectifier in the converter of Studenka in 1969. By replacing mercury valves with model VK 200/5 silicon valves in the original rack—a frame for the mercury rectifier—they built a semiconductor rectifier specified as URSi 69 whose prototype was put into operation in the middle of 1969.

Technological designs for the exchange of mercury rectifiers and their replacement with silicon rectifiers with natural cooling were developed in the Eastern Railroad administrative area in 1970 (see ZELEZNICNI TECHNIKA No 2 1970).

Toward the end of 1970 and early in 1971, the workers in the present department of electrical engineering in the Ministry of Transportation completed a thorough analysis necessary for a rational replacement of mercury rectifiers with silicon rectifiers based on the analysis of results of models used in operation, because the obtained results confirmed that it would correct to proceed with the planned replacement. The following indicators set for innovation of traction rectifiers are considered in the analysis:

1. Improved safety of traffic.
2. Savings of electric power in the power system.
3. Elimination of high-risk places of work with mercury vapors in the converters and in repair shops for the converter equipment.



4. Liquidation of repair shops for mercury rectifiers, including laundries and hygienic facilities in converters.
5. Potential reduction of the number of operators in converters and a new rational organization of operation and maintenance of converters.
6. A realistic program for the replacement of mercury rectifiers after the delivery of appropriate technology required for the construction of silicon rectifiers by operators in sectors of electrical engineering.

These indicators may be characterized as follows:

Ad 1) Operation of mercury rectifiers previously called for considerable effort by attendants (before the rectifier was put into operation, its temperature had to be maintained at least at 15°C, a vacuum had to be obtained and controlled at about 1.0004 mm Hg, mercury valves ignited, etc) and by maintenance workers (correcting leakage in the rectifier, crashes after glow discharges in the vacuum duct of the rectifier and after the backfire in the rectifier proper as well as in the traction transformer, in the machine and feeder high-speed breaker). Replacement of mercury rectifiers with silicon rectifiers will substantially improve the reliability of the operation because the above-mentioned breakdowns cannot occur in semiconductor rectifiers. As compared with mercury rectifiers, higher operational reliability is guaranteed by the use of simpler and more reliable elements, such as silicon diodes, as well as by the overall simplification of the rectifier system due to the elimination of considerable auxiliary equipment necessary for the operation of mercury rectifiers.

At the same time, the use of semiconductor valves facilitates repeated return from direct connection of the rectifiers to bridge connection which is in every respect more advantageous for semiconductor rectifiers. This makes way for further simplification of the converter equipment and for savings of electric power by eliminating neutral chokes, neutral peak chokes and filters in converters, which equipment is necessary for the operation of rectifiers in direct connection.

Ad 2) It is envisaged that the losses in rectifying sets will be cut because no auxiliary equipment (pumping unit, cooling fan, ignition equipment, etc) is needed for the operation of silicon rectifiers and because silicon diodes are more efficient (contact losses are substantially lower in silicon diodes than in the flaming arc in mercury vapors between the anode and the cathode in mercury rectifiers, etc). The average annual saving of electric power in one silicon rectifier amounts to 85 MWh (see ZELEZNICNI TEHNIKA No 2, 1977—Fulfillment of the Tasks of the State Rationalization Plan).

Ad 3) High vacuum must be obtained by means of pumping systems in mercury rectifiers in converters, but there are no mercury vapors in the operation with silicon rectifiers, which eliminates hazards and danger to health in places of work for operators and attendants working with technological

equipment in converters. Due to a lower noise level (caused above all by the cooling fans in mercury rectifiers), a favorable environment has been created in converters.

Ad 4) Harmful environment has been eliminated also in repair shops for converter equipment; no special hygienic equipment and facilities are needed in repair shops, converters and in laundries for work clothes.

Ad 5) The change in the working environment in converters, potential liquidation of repair shops for mercury rectifiers and of hygienic facilities in repair shops and laundries, and substantially higher operational reliability of silicon rectifiers have created conditions for the determination of a rational organization of the operation and maintenance of the converters and preconditions for potential transfer of some of the attendants to other jobs, primarily in operation. The substantially higher operational reliability of silicon rectifiers also provides advantageous preconditions for gradual liquidation of attendance of centrally operated converters.

Ad 6) When selecting the method of conducting the exchange proper of rectifiers, it is realistic assumption that the technological equipment of silicon rectifiers will be supplied by the manufacturer, the Elektrotechnika plant for the Ceskomoravska-Kolben-Danek in Prague, and that the assembly works will be provided by workers of the electrical engineering sector.

The following demands were observed in negotiations of the conditions for the delivery of rectifiers:

- the existing traction transformers of mercury rectifiers will be retained for the new silicon rectifiers;
- on principle, silicon rectifiers with natural cooling systems will be used in stationary converters and with forced cooling systems in mobile converters;
- the D 200/1 200 silicon diode will be used as the standard type in new silicon rectifiers.

Following an evaluation of individual points of this analysis and an assessment of the projected savings and higher safety in the operation of the converters, the workers of the electrical engineering sector at the Ministry of Transportation negotiated the price of silicon rectifiers with the manufacturing enterprise, the Ceskomoravska-Kolben-Danek. The price acceptable for Czechoslovak State Railroads was based on an analysis of innovation of rectifiers and opportunity for the delivery of appropriate technological equipment for the CSD with the assumption that this equipment will be assembled by operational forces, i.e., workers of electrical engineering sector.

An agreement for the delivery of at least 100 silicon rectifier units in the 1971-1975 period was signed with the Elektrotechnika plant of the

Ceskomorabska-Kolben-Danek enterprise on 21 July 1970; the price was set at 281,000 koruny for each rectifier with parameters of 330 V and 1,000 A, and at 417,500 koruny for each rectifier with parameters of 3,300 V and 1,500 A.

With respect to the agreement that appropriate technology will be assembled by workers of the electrical engineering sector, the electrical engineering department with a team of workers in electrical engineering services of the railroad administration and the electrical engineering sector and with workers of the Railroad Research Institute, department of electrical engineering, were called to prepare the required technical documentation. The model technical documentation prepared for all types of converters, including mobile units used by the CSD, was approved by the electrical engineering department of the Federal Ministry of Transportation on 18 July 1972 and expanded in ZAVADECI LIST [installation instructions] No 2/1972 to be implemented by all electrical engineering services of railroad administrations.

The required model technical documentation and technological method of replacement of mercury rectifiers with silicon rectifiers which were submitted stipulated the condition that the work on individual rectifiers proceed without discontinuing operation of other rectifiers in converters feeding power in electrified railroad lines. Workers of the sector of electrical engineering and electrical assembly workers fulfilled this condition by working with increased caution in facilities near high tension without one single case of injury caused by electric power.

In some instances the replacement of rectifiers proceeded while the stationary converters were completely disconnected for a prolonged period and fully replaced by mobile converters.

Even before the beginning of replacement of mercury rectifiers, the schedule for the replacement of the rectifiers was necessary in terms of their viability and of the use of the existing facilities as spare parts for other mercury rectifiers still in operation.

After such an extensive period of preparation, a smoothly organized exchange of mercury rectifiers and their replacement with silicon rectifiers began. At the same time, the supplier included in new investments the use of silicon rectifiers in converters in railroad lines under construction.

In the framework of the exchange of rectifiers, a switch from direct connection to bridge connection of the rectifiers began to be implemented gradually since 1974 in accordance with the improvement plan proposed by the workers of the Elektrousek in Kosice and later expanded throughout the network. The necessary reconstruction of the original traction transformers of mercury rectifiers was completed by the workers of the electrical engineering department in repair shops for converter equipment in Hranice na Morave and in Kosice. Complete switch of silicon rectifiers operating



heretofore in direct connection to the indisputably more advantageous bridge connection depends on the potential capacity for reconstruction in both repair shops and therefore, it will be completed in future years.

Since their introduction into operation silicon rectifiers have been studied very carefully in order to prevent unexpected breakdowns or malfunctions. In the middle of 1971, almost one-fourth of all rectifiers in operation in converters of the CSD was furnished with silicon rectifiers. At that time, silicon rectifiers had completed nearly 350,000 hours of operation (individual rectifiers from 1,000 to 18,000 hours according to the date of their introduction into operation). An exception was the silicon rectifier in normal operation since 1967 in the converter in Strba, which had completed nearly 28,000 hours of operation in the middle of 1971.

The number of damaged silicon diodes was 194, which is negligible in view of the number of about 8,200 diodes operating in 48 silicon rectifiers. The fact that the breakdown of a silicon diode occurred only after 1,800 hours confirmed the operational reliability of silicon rectifiers.

Several major malfunctions, the so-called avalanche breakdowns of rectifier branches, occurred in 1972. During such accidents several silicon diodes had broken through into the branch of the rectifier. This situation was immediately studied and the causes of the breakdowns investigated by the workers of the electrical engineering department who requested cooperation of the Railroad Research Institute, the electrical engineering sector, as well as of the workers of the electrical engineering and semiconductors department of the Ceskomoravska-Kolben-Danek. In the process of investigation and tests of operational reliability of silicon diodes, it was ascertained that avalanche breakdowns occurred mainly on the same rectifiers and in the same converters. Despite all the studies, the causes for the development of avalanche breakdowns in silicon diodes in branches have not been determined. Nearly 80 percent of avalanche breakdowns developed in rectifiers with direct connection.

The study of the causes of avalanche breakdowns and of their prevention served as a basis for measures taken to develop a silicon diode meter and to periodically check the condition of silicon diodes. This plan, as well as inspection of the adjustment of breakdown relay of silicon diodes, was included in technological instructions for the maintenance of silicon rectifiers. Although silicon rectifiers did not break down as a result of overvoltage entering from the trolley circuit into the converter, it was recommended that in order to increase preventive protection of the rectifiers against the effects of the above-mentioned overvoltage, the existing valve-type lightning arrester in the outlets of the converters be replaced with condenser lightning arresters of better quality (Table 1).

With the increasing number of silicon rectifiers and diodes, the rate of avalanche breakdowns has been declining. This confirms the specific character of avalanche breakdowns typical for only a limited number of converters. The causes of the development of avalanche breakdowns of silicon diodes are under continuous study, however, thus far they have not been determined.



Along with the investigation of such breakdowns, the criteria for the viability of silicon diodes have been evaluated and several extensive exchanges of silicon diodes took place in specified rectifiers in order to determine the symptoms of aging of the diode. Examination of the diodes in question failed to establish any essential data. It should be noted that the highest breakdown rate of silicon diodes occurs during the first few thousand hours of operation and that after 10,000 hours it is in the range of approximately one breakdown per rectifier annually.

Starting in 1972, after completing the tests and all work necessary for the preparation for the exchange of mercury rectifiers and their replacement with silicon rectifiers, innovation of rectifiers was initiated in accordance with the prepared working schedule and shortly thereafter, the projected operational results also began to appear.

Due to excellent cooperation of the Ceskomoravska-Kolben-Danek and the initiative of the workers of the electrical engineering services of railroad administrations and of the electrical engineering sector, the whole program for the replacement of mercury rectifiers gained considerable momentum in 1977, however, at the end of that year the successfully progressing program encountered certain difficulties with the delivery of the last 13 rectifier units. This occurred because other tasks had been included in the plan of the manufacturer, the Ceskomoravska-Kolben-Danek. Thus, the fulfillment of the delivery of the last rectifiers in 1978 called for special arrangements consisting primarily of manufacture of silicon rectifiers in the Elektrousek plant in Olomouc for the Central Railroad administration area and for the Southwest Railroad administration area, with final assembly of rectifiers from technological equipment obtained from Elektrousek in Vrutky and Kosice in the Eastern Railroad administration area.

For the above-mentioned reasons the final stage in the completion of the exchange of mercury rectifiers in the entire network of the CSD was one of the most challenging tasks that could be fulfilled only because of the special initiative by all interested workers on every level of management.

By completion of the exchange of mercury rectifiers and their replacement with silicon rectifiers in 1978, the tasks stipulated by the 15th CPCZ Congress in its guidelines for economic and social development during the 1976-1980 period, "For a More Efficient Management and Better Utilization of All Types of Fuels and Power," were fulfilled. The state program for rationalized consumption of fuels and power during the period of the Sixth Five-Year Plan, Part III "Rationalization Program for Implementation of Cross-Sectional Measures" under section 3.A.f. ordered the Federal Ministry of Transportation, in cooperation with the Federal Ministry of Metallurgy and Heavy Engineering, "To replace mercury rectifiers with silicon rectifiers to converters of the CSD."

Thus, the electrical engineering sector of the CSD fulfilled the tasks of replacing mercury rectifiers with silicon rectifiers in all converters already before the end of 1978, which not only improved the quality and increased the safety of powerfeeding of electrified railroad lines from 3,000 V and 1,500 V DC traction systems, but also achieved continuous major savings of electric power in electric traction, eliminated hazardous and harmful conditions in places of work, and gained financial savings in the operation of silicon rectifiers (Table 2).

As evident from Table 2, savings of electric power have been achieved in individual years from the beginning to the end of the exchange of the rectifiers, namely, always in the year following the exchange of the specified number of rectifiers in the preceding year. The table does not include other significant savings of electric power gained by switching from direct to bridge connection of the rectifiers, because thus far those savings have not been accurately computed for all converters in the CSD where such connection had been completed.

Total financial savings from the beginning of the exchange in 1969 to the year of its completion, 1978, amount of 18,185,400 koruny (annual savings for each silicon rectifier are 85 MWh, average price of 1 kWh of electric power for traction was Kcs 0.2 through 1975 and Kcs 0.26 since 1976) (Table 3).

Savings in places of work and financial savings are evident from the table (release of workers to new installations). Financial savings from the beginning of the exchange in 1969 until the year of its completion, 1978, amounted to a total of Kcs 35,033,200 (Table 4).

Total financial savings since the beginning of the exchange of mercury rectifiers and their replacement by silicon rectifiers in assembly by the workers of the electrical engineering sector amounted to Kcs 21,241,000 in 179 rectifier units. Additional savings which cannot be specifically expressed in terms of financial profits raised basic savings even higher. It is a fact that the exchange of rectifiers proceeded during full operation, without any cutback in the power feeding of electrified lines, while protecting the workers' safety; savings were derived from the liquidation of two repair shops for mercury rectifiers, laundries and closed hygienic facilities in converters, from lower number of repairs of technological equipment of mercury rectifiers and of the results of backfire in traction transformers (lower rate of repairs as a result of breakdowns in transformers as well as of regular repairs). It also is noteworthy that the use of silicon diodes in rectifiers rendered the operation of the converters more reliable, which has been directly reflected in trouble-free railroad transportation; furthermore, this is a prerequisite for the introduction of central control from an operational point in the CSD electrical engineering sector, which will further improve operational efficiency in power feeding of electrified railroad lines.

## Conclusion

The switch from mercury rectifiers to silicon rectifiers from 1969 to 1978 cost Kcs 100,240,000. Financial savings of electric power during that period amounted to Kcs 18,185,400, savings derived from reduced numbers of workers during that period amounted to Kcs 35,033,200, and economic savings gained from the exchange of rectifiers amounted to Kcs 21,205,000. It may be noted that the outlays for the exchange of rectifiers amounted to 100,240,000 and total financial savings reached Kcs 74,500,000 just during the construction stage.

If mercury rectifiers had not been replaced by silicon rectifiers, the annual cost of electric power, wages and materials in the CSD network, beginning with 1979, would be almost Kcs 11 million koruny higher, not to mention the immediate impact of the savings of electric power and work force for our entire economy.

The completion of the work on this significant program of "Innovation of Rectifiers in CSD Converters" created preconditions for further improvement of operations in installations of the electrical engineering sector. Construction of central control of stationary traction installations, selected heavy-current installations and installations for feeding of safety equipment have become a realistic target. To fulfill this extensive new program, the electrical engineering department ordered a study entitled "Technological Design of Central Control for Stationary Traction Installations and Feeding of Safety Equipment" which has been undertaken by the electrical engineering department at the Railroad Research Institute in cooperation with the State Institute for Transport Design and Planning, Center 12. This new model documentation serves as a basis for planning of necessary technological documentation according to local conditions of individual control points in electrical engineering sectors on the already operating electrified railroad lines within comprehensive reconstruction programs, and on newly electrified lines in the framework of investments.

The successfully completed program involving replacement of mercury rectifiers with silicon rectifiers in CSD converters confirmed again that the initiative and devoted work of the workers in the electrical engineering department and their superior expertise and skills are the best guarantee that all essential tasks in the sector of modernization of electrical engineering installations of the CSD will be fulfilled in the interest of technological progress and systematic improvement of conditions for railroad operation on electrified railroad lines.

Table 1. No. of damaged diodes per rectifier annually. Avalanche breakdowns observed in the 1972-1976 period.

*MLIV*

Tabuľka 1. Počet poškodených diód na jeden usmýkovač za rok. Hľadované obdobie lavínových prúžok 1972—1976

1. Rok	2. Počet poškodených diód vrátane lavínových prúžok	3. Počet poškodených diód bez lavínových prúžok
1972	2,1	1,61
1973	2,03	1,45
1974	1,67	1,32
1975	1,78	1,13
1976	1,79	1,08

1. Year
2. No. of damaged diodes, including avalanche breakdowns
3. No. of damaged diodes without avalanche breakdowns

Table 2. Electric power saved by the replacement of rectifiers.

Tabuľka 2. Úspory na elektrické energii dosiahnuté výmenou usmýkovačov

1. Rok	2. Počet Si usmýkovačov	3. Úspora na el. energii v MWh	4. Úspora na el. energii v tis. Kčs
1969	13	—	—
1970	31	1 108,0	221,0
1971	67	2 638,0	527,0
1972	84	4 944,0	969,0
1973	163	7 140,0	1 428,0
1974	149	8 786,0	1 761,0
1975	178	12 066,0	2 523,0
1976	190	16 130,0	3 026,0
1977	189	16 080,0	3 332,0
1978	216	16 914,0	4 293,0
1979	216	16 380,0	4 774,0
1980, old.	216	16 380,0	4 774,0

1. Year
2. No. of silicon rectifiers
3. Savings of electric power in MWh
4. Savings of electric power in thousand koruny
5. 1980 and following years.



Table 3. Savings in wages due to reduction of the number of workers

Tabuľka 3. Úspory mzdné na znížení počtu pracovníkov

1. Rok	2. Snížení počtu pracovníků	3. Úspora na mzdách v tis. Kčs	4. Poznámka
1969	—	—	Průměrný plat elektromontéra vnat 2 400 Kčs; 5.
1970	36	1 041,6	
1971	67	1 889,2	
1972	82	2 373,6	
1973	120	3 472,8	Průměrný plat mistra vnat 2 600 Kčs 6.
1974	160	4 341,6	
1975	173	5 004,0	
1976	180	5 208,0	
1977	183	5 382,0	
1978	200	6 072,0	
1979	200	6 072,0	

1. Year
2. No. of workers reduced by
3. Savings of wages, in thousand koruny
4. Note
5. Average wages of an electrician calculated at Kcs 2,400
6. Average wages of a foreman calculated at Kcs 2,600

Table 4. Savings at the Assembly of technological installations (including the price of the rectifier)

Tabuľka 4. Úspora získaná na montáži technologických zariadení (včetně ceny za uměňovač)

1. Zdroj	2. Průměrná cena uměňovače včetně montáže	3. Počet vyměňovaných uměňovačů	4. Celková cena za provedení výměny
5. Dodavatelským způsobem	842 000 Kčs	27	20,8 mil. Kčs
6. Hospodářským způsobem	443 000 Kčs	170	79,8 mil. Kčs

1. Source
2. Average price of a rectifier, including assembly
3. No. of replaced rectifiers
4. Total costs of the switch
5. From supplier
6. From economy

LAND RECLAMATION NECESSARY FOR IMPROVEMENT OF FODDER BASE

Prague HOSPODARSKE NOVINY in Czech 15 Jun 79 p 6

[Article by Engr Miroslav Toman, Federal Ministry of Agriculture and Food:  
"Land Reclamation—An Indispensable Condition"]

[Text] Czechoslovak agriculture has achieved significant successes in recent years. The results, however, could have been even more pronounced, if we had been able to restrict some negative phenomena and tendencies. This particularly applies to the diminishing area of agricultural land and shortcomings in its utilization. We must regard as the most serious problem the fact that we have still not succeeded in bringing about a fundamental change in the utilization of meadows and pastures in the mountain and foothill areas.

This unsatisfactory situation stems primarily from the fact that, in contrast to grain crops and other products for example, no adequate material-technical base has been created mainly by appropriate mechanization of operations in aggravated conditions. Likewise, economic tools and the resulting economic effect of agricultural enterprises have so far failed to bring about more effective utilization of less fertile, sloping and dispersed areas. In this situation, some agricultural enterprises resort to the extensive use of their lands and there is a tendency to convert them into forests or other kinds of land (This conversion involved 17,400 hectares of agricultural land, including 3,000 hectares of arable land, in 1976 and 1977 alone).

Despite considerable investments, the progress in land improvement and reclamation work does not meet the rapidly rising demands for agricultural production increase. Approximately 10 percent of agricultural land in the CSSR is frequently inundated. This is particularly true of the South Bohemian basin, Sumava region, the Odra river basin, Orava river basin, upper section of the Hron river basin and East Slovak lowlands.

Approximately 700,000 hectares of the areas permanently covered by grass (meadows and pastures) require some adaptations of the terrain, reseeding and improvement of main roads leading to them.

To eliminate these problems, basic measures are being taken along the entire axis of management of agriculture. In cooperation with the scientific research base, the ministries of agriculture and food have processed a study for gradual cultivation of all meadows and pastures including the borderlands and areas accessible only with difficulty. The long-term solution will require a great deal of investments, materials and organization. It depends, however, also on the speeding up land improvement and recultivation work, deliveries of appropriate equipment for cultivation and harvesting of sloping and not easily accessible lands, and a complex of measures for promotion of increased breeding of cattle and sheep in these areas.

Of the total Sixth Five-Year Plan target of draining at least 300,000 hectares of agricultural land, 166,700 hectares have been turned over to use as of now. In recent years, reclamation projects began to be carried out, at higher costs, in more difficult soil and terrain conditions in the foothill and mountain areas. The largest areas to be reclaimed are in the West Bohemia, South Bohemia and East Slovakia krajs.

The improvement of small river beds constitutes the indispensable condition for reclamation. Of the total goal of 17,600 km, the river beds in the length of 11,600 km have been improved so far (8,600 km in the CSR, 3,000 km in the SSR). Due to the large investments involved, the repairs have been carried out in the most urgent scope only. In the already improved river beds maintenance remains a permanent problem.

Irrigation constitutes an important intensification factor. Irrigation projects were completed on the area of 314,800 hectares by 1978 (105,400 hectares in the CSR, 209,400 hectares in the SSR), that is 24.2 percent of the total goal. Of the total Sixth Five-year Plan goal to irrigate 73,000 hectares, the irrigation projects were completed on 47,600 hectares or 65.3 percent in the first 3 years of the current five-year plan.

Irrigation facilities are being constructed on the priority basis in the areas with low precipitation, most fertile soils and readily available water supply—particularly in the lowlands along the Danube river, in the Zahorie region, Tmava area, middle and lower sections of the Labe [Elbe], Ohre river, southern Moravia, East Slovakia and Moldavia lowlands. Yet, the irrigation systems and facilities are still not effectively used. Some agricultural enterprises have still failed to make full and rational use of irrigation for the most intensive products. This is particularly true of slow progress in specialization in vegetables and fruit production, but also in production of quality roughage. Experiences show that proper use of irrigation increases gross production on the average by Kcs 4,000 per hectare of arable land. Since irrigation becomes the decisive intensification factor in the next stage of development of agricultural production, it is imperative to pay increased attention to it. The weather pattern this spring in particular underlined the necessity of constructing additional irrigation facilities for the stabilization of results of agricultural production.

What significance is attached to irrigation in the neighboring states? In the GDR, irrigation facilities covered 620,000 hectares by 1975; it is anticipated that one million hectares—a 48 percent increase—will be irrigated by 1980. In Hungary, the irrigated area is to increase from 487,000 hectares to 725,000 hectares—that is almost by 30 percent. The largest increase in irrigated areas is to be achieved by Romania during the 1975-1980 period—from 1.4 million hectares in 1975 to 3.1 million hectares by 1980.

Small reservoirs are being built to make use of local sources of water for irrigation. Reservoirs with a total capacity of 10.3 million cubic meters (3.3 million cubic meters in the CSR, 7.0 million cubic meters in the SSR) were built in the East Slovakia, Central Slovakia and North Moravia krajs during the 1971-1978 period. Accumulated water is used primarily for irrigation of special cultivation. Despite the acceleration of construction rate in the next few years, the goal will be achieved by the SSR only. Because of the importance of using local water supply for irrigation, it is necessary to intensively continue in the construction of small reservoirs also during the next five-year plan.

An integral part of comprehensive care for soil are noninvestment reclamation measures which by their land improvement and technical impact contribute to the cultivation of additional agricultural land. Of the total Sixth Five-Year plan target (1,405,000 hectares) noninvestment reclamation projects were carried out on 981,700 hectares or 69.8 percent during the first 3 years of the current five-year plan, including 46.3 percent of recultivation of still unused land, 59.4 percent of reclamation of extreme very rocky soils, 70.8 percent of land improvement by addition of lime, 35.1 percent of antierosion protection and 174.4 percent of terrain levelling projects.

To systematically increase the fertility of soil, it will be imperative to raise the soil productivity, insure a regular rotation of crops, rationally use manures and industrial fertilizers. It is necessary to achieve a radical change in care for storage of manures, their transportation, application and correct use in regard to individual products. Agricultural enterprises must design detailed programs for this purpose and, in accordance with the preparation of the Seventh Five-Year Plan, create prerequisites for it in handling equipment, construction of facilities for storage of manures and utilization of all other organic matter. The imperative nature of these measures has been confirmed by the experiences of progressive agricultural practice and scientific research base.

A considerable area of acid soils in the CSSR means that we must substantially increase the deliveries of lime fertilizers to such an extent that they will amount on the average to 4 quintals per hectare of agricultural land annually. This will require the necessary transportation equipment, storage and application.

The utilization of turf particularly in the mountain and foothill areas represents a significant reserve for further intensification of agricultural



production. This part of land has accounted only inadequately so far for feeding of cattle. Through the gradual exploitation of turf particularly in the borderland areas it will be possible to reduce the share of arable land in feeding of cattle and sheep. The foremost task must be the organized utilization of all areas in these regions. This means that the areas suitable for mechanized harvesting must be gradually intensified by regular harvesting, better nutrition and systematic reseeding of grass covered areas. The other areas must be utilized for grazing of young cattle and sheep, and gradually recultivated and appropriately watered.

The proper registration of soil constitutes the fundamental prerequisite for consistent measures in the utilization of soil. This is the purpose of physical inventories of land which are to be completed by 31 December 1979. The rate of inventory taking must be speeded up particularly in Slovakia. For this purpose, it is necessary to enact specific measures so that taking of physical inventories are completed on time by all agricultural organizations, and the more accurate registration of land could be used as an important indicator of the state plan in planning of agricultural land already as of 1 January 1981. The okres national committees must see to it that on the basis of these inventories changes are continuously made in the registration of land. This more accurate registration of land will serve as the initial base not only for planning, but also for the utilization and protection of soil.

Practically, this means that all land suitable for agricultural purposes must be administered by a manager responsible for its full and rational utilization. On the basis of inventories thus taken and specific measures designed particularly to make use of hitherto uncultivated land, a proposal should be prepared for recultivation and reclamation work and new organization of land in the next period.

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ECONOMIC DEVELOPMENT, SHORTCOMINGS IN PRICE SYSTEM DISCUSSED

Budapest TARSADALMI SZEMLE in Hungarian No 6, Jun 79 pp 11-19

[Article by Emil Nyul, MSZMP Central Committee subdivision leader, candidate: "Our Economic Development and the Price System"]

[Text] In recent years the MSZMP Central Committee has made a number of resolutions of great importance addressing the basic questions of our constructive economic work. Among these the evaluation by the April 1978 Central Committee session of work accomplished since the 11th Congress and party tasks, the October 1977 resolution on the long-term development of the foreign economic policy and production organization, and the December 1978 resolution on the main tasks of the annual national economic developmental plan stand out.

On every level of the economy, in the enterprises, in state and party economic directives, and in professional and mass organizational work the resolutions, in an organic relationship and harmony with one another, indicate the tasks requiring a concerted solution so that we can put into effect the economic policy guidelines established in the fifth five-year plan.

Improvement in our price system is of great importance from the point of view of increasing the efficiency of our constructive economic work, but also because of its social and political role. In this connection the April 1978 session of the Central Committee took into consideration the effects of world market price increases levied in 1973-1975 and declared the following: "Socialist economic strength is assured by the fact that the state has been able to apply brakes to the distorting effect of high world market prices by using centralized measures, and has made sure of the dynamic development of our economy and a further rise in the living standards of our people. On the other hand this is why a situation has developed where the production price level, as a result of the complicated system of state subsidies and withdrawals, currently exceeds the general consumer price level. The production and consumer prices do not sufficiently reflect reality in their costs, and this renders

clearsightedness, effective management, production organization reform and realization of economic policy goals difficult, both on the national economic scale and in factories. For this reason the Central Committee considers an improvement in our price structure, in harmony with our economic policy goals, a long-term necessity. More logical management requires that the production and consumer prices better reflect actual costs."

At the present time preparatory work directed toward an improvement in the price system is proceeding in a wide area, and already necessary comprehensive measures have been drafted and the main directions to be followed in the coming period in our price policy are being formulated.

Understandably our public opinion is taking a lively interest in questions related to the price system, and therefore in this article we shall deal with the most important relations which form the basis for the further development of our price system.

#### Questions of the National Economic Equilibrium

The need to reform our price system is closely associated with the tasks of our constructive economic work, including the formation of the foreign trade balance. For this reason it is expedient to express a few ideas on the foreign trade balance and on the economic tasks associated with it.

We can speak of an economic comprehensive domestic and foreign balance when in general we allot as many goods as we produce to the national economy and use them to satisfy various needs, including selling some of the goods produced to foreign markets, and purchasing goods needed by us for an equivalent value. Now we can disregard the fact that occasionally or regularly we introduce into our economy additional resources based on foreign credits for the purpose of accelerating development, making it possible to exploit more assets than we have produced.

A number of causes can endanger the equilibrium: unjustified increases in investments and stockpiling, the effectiveness of which cannot produce the equivalent of the imports, and unjustified increases in our consumption. In practice the two usually occur together. A basic task of the economic policy is to anticipate the formation of these discrepancies. If such tendencies do occur, harmony between the various needs and the actual economic possibilities can only be produced by raising production efficiency and by moderating the increase in consumption.

Cases of disruption in the equilibrium, caused by changes in foreign conditions, are possible. This is the case when relations in goods exchange on the foreign market suddenly change to a great extent: all of the products imported by us become significantly more expensive than the products exported by us. Without our being culpable we can actually find

ourselves in the same conditions as if we were consuming too much, and spending more for investment and stockpiling than is possible, in consideration of the unfavorable changes in foreign trade relations. A situation developing in this way is exactly the same as if we had spent more than our real assets for years through our own fault. Moreover, in these cases just as much effort is required to restore the equilibrium as if we ourselves had caused the disruption. Our country and our people are only capable of finding a way out of this situation and of overcoming it by tasks, no matter how difficult, if they apply themselves with discipline in complete unity.

Just such an influence befell our national economy on foreign markets in recent years. It is probably enough to mention the following to demonstrate the magnitude of the ensuing disruption in the equilibrium: the gross product of our national economy, which we can most comprehensively express with the national income produced, based on the work of previous years successfully reached an approximate annual amount of 400 billion forints in 1974 and 1975. Our incomes have appropriately advanced in conformity with this. With their aid we have been able to consume part of the goods produced, apply some to improving our living conditions, and have set some aside as a basis for further development. The losses stemming from the unfavorable changes occurring on foreign markets has been the same as if, from year to year, they had raised the cost of our production by an extraordinary amount, creating a situation reducing our national income by approximately 10 percent. Perhaps it would not be an exaggeration to state that no country and economy in the world, no matter how much more economically developed, stronger, richer, smaller or larger than ours, could fail to be tangibly or even seriously affected by an unexpected avalanche of losses of such a magnitude.

What must we do and what can we do in this situation to preserve our economic successes and to avoid a collapse in our development? There is no doubt that, once necessary reorganization has been implemented, we must mobilize our mental and material resources and adapt to the changed foreign trade conditions. This will buttress the new tasks and requirements in every area of our economic and social life. These include a reappraisal and restructuring of developmental concepts for areas and branches of the economy and for individual production functions in our economic life, and exploitation of every instrument to give preference to those functions which we can effectively utilize in a state of advanced development to increase our export capacity.

Naturally this is inseparable from our increasing removal of our resources from less efficient areas of the national economy. These processes do not prevent, but even cause, every management organization in every area to make maximum efforts at the same time to enhance the economic nature of production and to achieve the greatest possible production success by means of thrifty and reasonable management of mental and material assets at our disposal.



The processes of economic and organizational change, indispensable in the formation of the economic equilibrium, require essential changes in our investment policy, in our consumption policy and in our distributional relations. In the midst of these changed conditions the national income must be first used for the prerequisites to balance restoration, and then for the distribution of goods which can be used for domestic purposes, stockpiling and consumption. This is a very important question because social production, including the increased rate of production of the national income and the associated resources allotable to increasing stockpiling and consumption depend on how rapidly we can progress in changing our production organization and in reorganizing our resources.

We must manage the tight resources at our disposal, both in investment activity and in the consumption area, very intelligently and efficiently. It is necessary to implement intense selection in our investment policy, moderation at every level of the national economy in making investment decisions, and severity so that our equilibrium situation will not worsen, but improve. In addition to the fact that the strictest economy must be achieved in the consumer policy, we must establish closer contacts in this area between participation in goods and work carried out, that is, an increase in the efficiency of work carried out. A large part of the consumer goods in the form of income resulting from work is established among the workers according to their work, and this system is able to assure incentives for better and more efficient work. In our current situation particularly great significance is attached to the fact that the role of the income system, stimulating better and more efficient work, is increasing, and that the resultant incomes are rising strictly as a function of increased efficiency and improved equilibrium.

The basic condition for definitely solving our various economic tasks and realizing necessary changes in the economy is that we enhance the efficiency of our economic directives in every respect and achieve the necessary changes in this area. Among other things this means that, at the same time, there must be improvement in the work of the central economic directives and in the level of independent and responsible management and activity on the part of the managing organizations.

The extensive economic changes necessary to establish an equilibrium will not come about automatically. These must gradually be established and coordinated within the sphere of the national economic plan, the guiding state organizations must "command" in coordination, and performance must be achieved in a disciplined way with enterprise cooperation. Naturally efficient utilization of the economic regulating instruments is also indispensable in solving these problems.

In many respects we are forced to correct our ideas, our attitudes and our actions so that we can capably solve the daily problems of our economic constructive work. We must first of all clearly see and understand the main directions in which we must proceed so that we can

eliminate the lack of equilibrium in our economy, consolidate the results we have achieved so far and lay the foundations for our coming development. This path, which requires an increase in our efforts and in many respects a departure from the past and a change in our attitudes, does not promise to be easy.

The requirements levied on our work in every area and on every level are becoming more severe. The interests of society increasingly demand that the individual workers contribute to joint social work where they can most effectively organize their efforts and bring them to bear.

For the most part the economic and political resolutions made by the MSZMP Central Committee in recent years were conceived in consideration of the requirements stemming from the changes in foreign trade conditions, and present circumstances for solving our various economic and social problems.

#### The Role of Price in Improving Equilibrium and Effectiveness

Price is one of the apparent forms of our production relationships and, as such, plays a regulatory role in every major process of social production, manufacturing, distribution and utilization.

When we speak of prices, we are generally accustomed to mentioning their directive and incentive function, along with compulsion for good work, the association between supply and demand, and the function of promoting the equilibrium in general.

The separate functions are based on the role of price which is played in distributing income within the economy and in continuous redistribution. The functions cannot be separated from one another, and come into play collectively, reinforcing one another in economic processes.

Let us take a closer look at how these functions are explained on the basis of the income-distributing role of price in economic processes, and how they can assist in creating economic equilibrium.

##### a) In Production Processes

The manufacture of every product requires machinery, buildings, equipment and various materials and tools, from which and with which the labor force finally produces necessary goods. However, production has definite costs (material costs, amortization costs, wage costs, and so on).

Every enterprise can produce as much income as the actual costs of the enterprise and the prices of products make possible for it. Since the basis for the individual management and development of the enterprise is the income which can be obtained, it is in the interests of the

enterprises to gain as much income as possible. Basically every enterprise has two methods of increasing its income: either by raising the prices of its finished products or by reducing its production expenses and constantly improving its production processes and methods by using available resources as intelligently as possible, or the two together.

Price properly fulfills its incentive and other functions when it does not make it possible for enterprises to overcharge their customers for expenses occasioned by unsatisfactory management, and thus gain their income. If this limitation can be established by prices, substantial incentives can really materialize in enterprise management, and real incomes, which form the real material base of our development, can continuously rise. In our present economic conditions, the importance of this type of limiting role of price has increased, because production costs have significantly risen as a result of foreign market changes, and in the interests of countering their income-reducing effects as well as promoting equilibrium, it is increasingly necessary to economize with materials, energy and every type of expense item, and we must improve our production efficiency. Under such circumstances the role of a standard stimulating effective management can be better played by the price which we use in our foreign trade contacts, since the changes unfavorable for us have been introduced into the area where requirements must be met by increasing the efficiency of our production and management.

#### b) In Stockpiling Processes

The disruption introduced into the foreign balance position of the national economy inevitably entails a restriction on possibilities of increasing goods which can be allotted to stockpiling and investment, and increases our need for selective distribution, concentrating on those areas where efficiency can most favorably be increased from the viewpoint of rapid recovery from losses in the national income.

Guaranteeing these processes is basically the task of planned economic guidelines and economic policy, but the price functions are just as indispensable here. Well-functioning prices promote the development of favorable tendencies in three respects: by means of income achieved for the most part in prices and assignable to stockpiling, by distribution according to the effectiveness of the various activities of this income, and finally by means of the prices of goods assigned to stockpiling.

Experience teaches that the price functions must also be reinforced in this area. We can do most to promote this by basically adopting foreign market prices as the standard.

### c) In Consumer Processes

Similar to the stockpiling processes, the loss of national income stemming from the breakdown in the rate of exchange renders the rate of growth in real consumption inevitably more moderate than previously, as long as we do not establish a foreign trade balance by improving production efficiency. Along with this is the very important requirement that, in the meantime, we use every method to promote reasonable and economical consumption, which also contributes to improving the national economic balance.

The economic policy can apply and has been applying a number of methods for the planned guidance of these processes. Two of these are of outstanding importance: nominal income (including wages), and the prices of consumer goods and services. The evolution of these two factors together determines the possibilities of an increase in real consumption.

We must use these individually and in concert, and apply them so that they have a favorable effect on the formation of the equilibrium. In the field of incomes the incentive role of the wage system must particularly be enhanced to raise effectiveness and to aid in increasing our resources, and thus the favorable formation of the equilibrium. At the same time there must be assurance that nominal income changes in harmony with the actual increase in efficiency, so that we can avoid unjustified increases in prices.

Income can only achieve its best incentive effects, exerted on production processes, with proper and simultaneous effectiveness in the price functions. Consistent effectiveness of price functions in the consumption sphere and the development of favorable effects exerted on the balance make further development of the price system necessary in two respects:

1. The concord between the consumer and the production prices of consumer goods must be increased. One method of doing this is to lower the high state subsidies in consumer prices. An increase in such concord, by means of rational changes in the consumption structure, will not only have a favorable effect on the balance situation in our economy for a short time, but also for a rather long time.
2. There must be continuous assurance of a consumer price movement paralleling justified production price changes, because only in this way can consumer prices have a favorable effect when used on the consumption structure and the formation of consumption in harmony with improvement in the national economic balance.



## Our Price System Problems

During the elaboration of the principles of the price policy of our party and government, as well as in the concrete practice of our price policy, there has always been an attempt to make prices fulfill their functions as well and as completely as possible, and to develop a price system to create favorable conditions to coordinate the valid interests of the production, distribution and consumption processes. We have achieved perceptible success in these endeavors. Nevertheless, we can not yet declare that we have solved every problem well.

Interpreted as a system of financial preference, our price system has maintained its mark of "self-sufficiency" in the face of every movement, including foreign trade prices. That is, in essence today's price system reimburses every management organization for enterprise expenditures, either with prices or outside of prices and independently of effectiveness, measured by the international standard of activity, and also guarantees income for everyone, good and poor workers alike. Under these conditions our management organizations do not perceive, and indeed cannot perceive, the value of the altered economic conditions and of the unusually severe requirements appearing in them. But in this way price loses its guiding, incentive force, demanding more efficient management, and does not suitably assist in solving the balance problems.

This situation confuses the economic guiding organs both in making economic decisions and in substantial and effective guidance for the economy.

However, the basic reason for the further development of the price system is to aid, we may say, to oblige every management organization and the entire economic direction so that they will increase their efforts in accord with the changed economic conditions and requirements, so that the production organizations can use desired changes and essential improvement in management and so forth to restore the foreign balance of the national economy, which is a basic condition for our further development. Such requirements can only be met by a price system in which requirements, which foreign markets impose on our national economy, consistently come into play with the "self-sufficiency" principle.

Since our economic problems can only be advantageously solved if we establish our position in the foreign market by means of our production efficiency, the quality of our products, their modern appearance and so on, the theoretical basis for the further development of our price system is acceptance of the foreign market prices as a standard in setting and changing our domestic prices in every area of the national economy where economic export or import is a real alternative in production development.

The validation of this principle and elimination of the unique system of financial preference or lack of preference, unusually widespread in recent years (and largely maintaining the principle of self-sufficiency), make it necessary for us to initiate a one-time price arrangement throughout the national economy for the complete period. Following this we shall remain consistent in validating the foreign market price principle, constantly following the standard whose requirements we must consider objectively in our economic works. Constant validation of this principle brings the following advantages:

—Consistent application of the foreign market price standard makes it possible for us to clearly see and measure the actual efficiency of different production activity, in the wake of which the economic directive organizations and the enterprises wisely and continuously set up measures which eliminate the backwardness of a given activity.

—The economic direction and guiding organizations have effective methods available for solving organizational problems in production.

—It continuously guarantees that our management organizations, and thus the entire economy, will constantly perceive the changing conditions of management, the basis of which in our country is flexible compliance.

—The pressure to accommodate to the foreign market conditions will significantly improve the market work of our organizations and force them to increase exports and decrease imports, which will raise our national income in the long run.

#### The Relationship Between the Living Standard and the Production and Consumer Price Systems

The consumer price system followed in recent years and the rather rapid and extensive consumer price rises, especially after 1974, were in conformity with the goals of the living standards established for the fifth five-year period.

The experience of recent years has shown that the economic policy guarantees a modification of the living standard policy goals under price relations where consumer prices have changed and risen at different rates, so that like production processes they reflect the changes produced in the conditions of production, selling and management in general.

The same causes which made production price changes necessary were also responsible for the consumer price rises introduced in recent times. Nevertheless we have been unable to establish the proper harmony between production and consumer price movements. Changes in production prices, resulting from modifications of economic conditions, have been successful, just as in consumer prices. The general production price level, including the production price level for consumer goods and services, increased at

a faster rate than the consumer price level as a result of increases on a different scale. This was accompanied by the fact that the state subsidies for consumer prices further increased the distance from the production prices. Thus there was increased tension in the strain developed in earlier decades in our price system, and this appeared in the enormous split between the consumer and production prices.

#### The Difference Between the Production and Consumer Prices of Consumer Goods

Today's consumer price relations were essentially developed during the price and wage reform of 1951. Despite the fact that they have been modified in many details, they have not sufficiently followed the economic and social changes which have occurred.

The conditions of production have changed radically. Workers' incomes have increased several times over. The structure of society has changed, living standards have risen, and demands have been altered, along with the composition of consumption. The area of consumer goods and services has been greatly extended. After the quantitative increase in supply, a supply of goods of greater selectivity and more developed quality had to match the solvent demand. Our consumer price policy has not kept pace with these changes.

Under such conditions the contradictions between the consumer and production price systems have become intensified.

In the last decade we have taken a number of steps toward solving these contradictions. In a broad area of substitutable products the consumer prices have become more aligned with the production prices, and this has improved their guiding effect. But basically we have not been able to institute a change in the large-scale state subsidies of consumer prices.

In order to eliminate unjustified consumer price support in our price policy we have aimed at the gradual creation of a so called "value-proportionate" consumer price system. We have had success in these endeavors of ours, but the process leading to the creation of the value-proportionate consumer price system broke off in the middle of the 1970's. At this time the world market price changes accelerated changes in our domestic, production, prices to a significant extent, but these were not passed on to consumer prices.

Protecting our domestic consumer price level from the foreign market effects further increased the deficit in the state budget. Thus, at the end of the fourth five-year plan and at the beginning of the fifth five-year plan, when changes in price relations had already begun in the socialist market, the domestic consumer prices were already separating from the production prices in a greater and wider area, as in the previous period.



At the present time the annual consumer price supplements for goods and services is already 40 billion forints, and this total is greater than the total turnover. More than half of the turnover comes from consumer goods, but nearly half of it is applied to foods. In addition to this fuel and household energy, passenger transportation, food traffic for guests, and prices or fees for children's articles require significant price support.

Without significant changes the consumer prices are no longer capable today of performing their functions. The major defects of our consumer price system can be summed up in the following:

—Current price proportions do not sufficiently orient consumers toward the formation of an economically more reasonable consumer structure nor toward one more desirable from the viewpoint of life style;

—The demand shaped under the effect of consumer prices has not given producers the long-term goal of shaping the consumption structure;

—The market influence is not capable of presenting sufficient signals in the absence of sufficient price flexibility. The prices for obsolete articles are not dropping, but the unsold goods and superfluous capacity are increasing, and vice versa: the most modern articles (except for the traditional free market) are not receiving proper respect from prices, but are becoming articles of short supply;

—The price system is characterized by the fact that the production price level is higher than the consumer price level, which means that the consumers are not paying for their purchases what they should be paying on the basis of expenses, and therefore part of the production expenses must be paid for from the common resources of society, with no connections to the interests of the social policy;

—Price supports extended because of social preference do not fulfill their tasks, because there are classes of beneficiaries who receive extra support otherwise.

The causes of the current conditions in the national economy and of the transformation of the major economic processes, already recognized from past years, makes it necessary for us to restructure the production price system in a single comprehensive framework in keeping with requirements. It has also become necessary for us to implement essential changes in our consumer price system. On the one hand we must take a significant one-time step forward in the interest of creating a "value-proportionate" consumer price system, and on the other hand we must follow this by continuously guaranteeing a coordinated change in production and consumer prices, so that we cannot unwittingly develop strains which our price system is currently burdened with.



The tasks facing us in changing our production and consumer price system are great and difficult. We must count on the management organs and on the populace in meeting these difficulties and problems. But the economic effects of strengthening the price functions will favorably influence our balance position in both the short run and the long term. We must count on this, and in our current position this is an attitude and requirement of basic significance. Our short-term and long-term interests equally justify the fact that we accept the difficulties accompanying this task and do not postpone these changes.

While implementing the changes which must be realized in the price system, our party and our government consider it a basic requirement to prevent the price changes from conflicting with the realization of the goals of our living standard policy. Therefore the consumer price measures are paralleled by income-increasing measures which together guarantee that the living standards of every basic class of the populace will evolve in keeping with real possibilities.

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CSO: 2500

# RESULTS OF CONSUMER OPINION SURVEY EXAMINED

Budapest FIGYELO in Hungarian No 24, 13 Jun 79 pp 1, 6

[Article by I.W.: "Technical Products: As the Consumer Sees It"]

[Text] The Ministry of Metallurgical and Machine Industries has charged the National Institute of Market Research to conduct a general consumers' opinion survey about products made by branch industries and of companies' opinion about production and working conditions. This survey was made in the course of preparation of the television's program entitled "We Asked the Minister" but, because of a limited time, only part of its results were included in the program. Thus it will be beneficial to give a comprehensive review of the survey.

The survey was conducted, according to methods used in traditional market research, on the basis of questionnaires involving 2,500 persons. In the course of the survey, answers were given to three different questionnaires by 435 high and middle-ranking executives of 106 metallurgical and machine manufacturing companies, 880 workers of 25 companies, and 1242 families from the capital city and the provinces. The consumers' questionnaire had 9 groups of questions, those sent to workers had 8, and those sent to executives had 10. The selection of questions represented, of course, the interests of the branch industries, which is concomitant of all surveys of this kind.

I do not know how many times it happened before that a branch ministry conducted such a general survey to find out about the consumers' opinion. This initiative is very useful and I think that this method must be followed in the future, and not only with reference to individual tasks but also as an integral part of branch management. It is in accordance with the fact that the branches must contribute more and more to fully meet consumer's demand.

## About Supply

We will show at this time, with the aid of the survey, the retail supply of technical products and the buyers' motives.

One of the important criteria of assessing supply is continuity. According to the survey, the continuity of supply in 1979 of technical products was seen as 93 percent for television sets, 91 percent for radio sets, 89 percent for refrigerators, 75 percent for enameled kitchen utensils, 68 percent for washing machines, 58 percent for electric stoves, 52 percent for aluminum utensils, 51 percent for gas appliances, 47 percent for metal toys, 39 percent for bicycles, 37 percent for hand tools, 34 percent for garden tools, 33 percent for locks and padlocks, and 31 percent for nails and screws. The area distribution showed only a plus or minus 7 percent variation.

A lack of continuity in the supply of technical products leads to commodity shortages. The shortage in locks, padlocks, nails and screws is especially acute, which indicates that these "small and light" items are neglected both in production and commerce. Generally, the range of selection also follows the range of supply but the leaders in this respect are not television sets but refrigerators.

Very interesting statistics were recorded about motivation for buying; these reveal that first-time purchases have nowadays been superceded by trade-ins and that the number of second and third purchases of identical or similar products has increased. This is related to the rise in the living standard and is an indication that producers must reckon with "experienced" consumers whose demands are well defined and who are sensitive about quality because they trade in for better performance.

#### Reasons for Purchase of Best-Selling Products

(Answers in percentage. All answers = 100 percent)

Most often mentioned	Trade-in	First purchase	In addition to existing appliance	For other reasons
Television set	73	15	12	-
Gas appliance	42	53	6	1
Washing machine	53	25	10	12
Radio set	50	21	28	1
Refrigerator	49	41	5	5
Bicycle	36	24	29	11
Enameled utensils	36	23	30	11

The conclusion of the survey, buyers that were able to buy 50 percent of the technical products right away, 39 percent only after searching, and that 11 percent was either substituted with different products or no purchase was made, is a very important fact from the standpoint of continuity of product supply - and is a warning to both producing companies and organs of domestic and foreign trade.

I think, no lengthy commentary is needed for the fact that the ratio of 39 percent in searching cannot be viewed as a sensible use of free time. It is

rather the financial basis for the practice of tipping; the consumer often gives up "legal" ways of procuring these products at the outset and instead looks for "loopholes."

#### Quality Is Good But...

The survey gives special attention to discovering consumer opinion about quality. This is related to the fact that, with regard to companies of the Ministry of Metallurgical and Machine Industries, too, the main task in development and production must be the improvement of quality. It must be clear that the consumers' judgement on quality is subjective and is not primarily connected to technical parameters but rather to his satisfaction in the use of the products. This judgement of quality does not, correspond therefore, with the actual or potential picture of the products' up-to-dateness and international competitive capability.

With these preliminary remarks, it is a favorable symptom that 63 percent of the consumers surveyed were satisfied with the quality of domestic technical products, 27 percent mentioned minor complaints, and 10 percent had a negative opinion. Consumer concept of quality was greatly influenced by the products purchased, because the classification of individual products is very diverse. For instance, nails and screws, belonging to shortage commodities, as mentioned, are also the ones whose quality is most often criticized.

In connection with problems of quality, it must be noted that the complaints about quality were formulated by 1-2 percent of those surveyed; the others only expressed their satisfaction. Thus the branch industries must initiate further surveys in order to learn more about the consumers' opinion of quality. This would make it possible to develop a more appropriate system of quality requirements regarding domestic products, and to better satisfy consumer demands.

From this standpoint, the part of the survey in which the Institute wanted to find answers to the factors influencing the selection of products, is especially noteworthy. The five designated criteria asked were dependability, performance, price, handling characteristics, and appearance.



Importance of selected motivating factors  
(Answers in percentage. All persons asked = 100)

Factors	1	2	3	4	5	6	No grade <sup>+</sup>
	grade of merit						
Dependability	58	13	6	2	1	1	19
Performance	22	18	13	14	8	2	23
Price	12	17	18	12	18	2	21
Easy handling	10	20	18	17	12	2	21
Appearance	5	9	15	19	25	2	25
Other factors	1	1	1	1	2	59	35

+ The factor examined was not considered significant

It is apparent that dependability and performance play the leading role in the consumer judgement, and this means that the basic motivation in his thinking is the utility of the product. It is perhaps surprising that the factor of price is only third in line. It must not be overlooked either that 35 percent of the consumers did not grade these criteria, for they judge products in their totality.

A problem connected with quality is consumer judgement on break-downs of our mechanical products. In this connection only 50 percent are satisfied, and 27 percent mentioned minor faults. It is interesting that 23 percent of the break-downs were considered to have been caused by the consumers themselves.

This information reveals that, although a significant step forward has been made in the development of consumer services for technical products, much more development is still needed, for hard-to-understand instructions, lack of demonstration and the inadequacy of advertising have an effect on the operation of these products. Furthermore, the break-down of certain small parts is rather frequent, which is only an annoying trifle but, nevertheless, brings discredit upon the quality of the given product while the important performance indicators meet international requirements.

There is a great consumer interest in tests of products appearing in the weekly magazine A MAGYITO [The Magnifier] and I have seen that many buyers study these before buying. In order to better coordinate buying intentions and supply, domestic production also must follow fast changing demands. This is an excellent cure for piled-up stocks and for competition against certain imported technical products.

#### Purchases That Fell Through

The ration of purchases that fell through or the demand that is not met by domestic producers, gives partial information about the realization of tasks in branch supply.

This ratio is very high. I think that this disproportion is caused by factors that cannot be traced back to the product structure and interest relationships of companies under CEMA supervision alone, but are also connected with the imports of consumer products and with related problems of specialization. These are, no doubt, complex relations which this essay on market survey cannot deal with. This does not mean, however, that these problems can be circumvented, especially not under the circumstances in which, alongside with the relatively slow improvement of living standards, the fuller meeting of consumer demand supercedes the economic significance.

The question is raised about the role of the product's origin in purchases that fell through. The survey gives the following answers:

#### The role of the product origin in purchases

(Answers in percentage. All persons asked = 100)

The person's domicile	Origin of product does not influence purchase	Interested in brand	Interested in brand only in certain products	Looking for imported products
Budapest	49	26	20	5
Cities	47	25	26	2
Villages	50	27	22	1
Total	49	26	23	2

The data indicate that the consumers' preference for a given product is not as strong as it was assumed; disregarding the given ratio of consumers in the capital city, demand for imported technical products is not great either. This fact is not to be overlooked from the standpoint of economical substitution of imports.

#### About Services

The question for consumers with reference to product service was as follows: "If one of your household appliances breaks down, where do you have it repaired most often?" "In order to have a larger appliance repaired, one of the family members must often stay home during working hours. In your opinion, what would be a good way of solving this problem?"

I think this evaded the question, in what degree the public is satisfied with the service of durable consumer goods. Several surveys are being done on this end and, to my knowledge, the problem of fast and reliable service has not been solved.

Repairs are made by the state, local and cooperative industries. The role of artisans is relatively small. In addition, the ratio of home repairs is

extremely high and this is not always reassuring from the standpoint of speciality repair of appliances and equipment.

A basic reorganization of the service system is suggested by many proposals from the public.

**Suggestions for the development of the service network**

(Answers in percentage. Total number of answers = 100)

Suggestions	Budapest	Cities	Villages	Total
Availability even after working hours	41	48	40	43
Availability even on free Saturdays and Sundays	24	30	34	30
Consumer's notification by telephone before working hours	25	17	13	17
Increase the number of artisans helping out after working hours	10	5	13	10
Total number of answers	100	100	100	100

The solution is not easy at all because of working habits. It is doubtful that the above suggestions would lead to a better utilization of working hours of both the owners of durable consumer products and specialists working in this field of services.

The National Institute of Market Research has surveyed the opinion not only of the consumers but also of participating leaders and workers in production. This will be reviewed in our next issue.

9414

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## PARTS PRODUCERS' ROLE IN ELECTRONICS INDUSTRY NEEDS NOTED

Budapest HIRADASTECHNIKA in Hungarian No 5, 1979 pp 129-134

[Lecture by Lajos Kovaskuti, president of HTE (Telecommunications Scientific Association) and of the Telecommunications Cooperative, presented on 10 Oct 1978 at the Components Conference held in Kecskemet under the auspices of MTESZ (Federation of Technical and Scientific Associations)]

[Text] The requirements of electronic equipment manufacturers with regard to the components industry differ, to some extent, from one another depending on:

--production methods (mass production or small-scale customized production, etc.);

--quality of products (professional or consumer products intended for the general public);

--use and purpose of products (cable communications, broadcasting, automation, computer technology, measurement technology, entertainment electronics, etc.).

There exist, of course, some common features which are characteristic in each case.

What I am going to talk about is not a series of conclusions based on theoretical considerations. They reflect my direct concrete experience obtained in the course of our development and production activities. Therefore, examples and numerical considerations will be concerned with professional and semiprofessional measurement technology and industrial telecommunications.

With certain modifications, the same conclusions will be valid for other fields.



The problems, difficulties and insights under discussion are more or less well-known among those present here, especially the equipment manufacturers.

An analysis of the causes behind the problem and my individual opinion aimed at a solution can perhaps stimulate some new ideas by those who, in some form, are interested in the manufacturing of finished products and are taking a personal interest in the development of this field.

Everyone knows that the period of the industrial revolution and the invention of power machinery had the effect of increasing the physical strength of man. The scientific and technological revolution of the present, on the other hand, is resulting in greatly increasing intellectual strength and knowledge at the disposal of man. This may be reflected in the processing, storage, rapid retrieval, comparison and fast forwarding of information. It involves the execution and programming of the most complex mathematical computations, programmed control, automated measurement and analysis, etc. Electronics forms the basis of all of these developments; it is no exaggeration to say that the development level of electronics is a determining factor of the strength of a country.

Electronics permeates almost every area of the economy and it contributes greatly to the cultural development of mankind and the use of leisure time through entertainment electronics. This is the explanation for the extraordinarily dynamic development of this branch of industry in all corners of the world. Therefore, there are good arguments for giving electronics a special role: this was realized by responsible figures in many countries who took careful measures in the interests of progress and development.

Manufacturers of electronic equipment and appliances are engaged essentially in an assembly operation. The technological quality, size, miniaturization requirements of products as well as the application of modernization requirements of products as well as the application of modern production technology and the resulting production efficiency are all determined, in the final analysis, by the components used.

Undoubtedly, there are many other conditions which are also necessary. Among these are:

- suitable financial resources;
- suitable production conditions;
- modern technology;
- high degree of organization;
- the right system of incentives;

- partial or full automation of production processes;
- highly trained and systematically retrained personnel;
- last, but not least, correct attitudes.

In the following, I will discuss the component aspects of this system of requirements.

As I mentioned, due to the general character of the assembly industry, the quality and technological level of products and the potential for satisfying quantity requirements are a function of assuring component supplies.

If we want to prevent an increase in our lag behind the technical levels achieved by highly developed industrialized countries, the components industry must fulfill the primary expectations of equipment manufacturers, namely, that they be freed from the problems of designing, producing and carrying inventories of parts, components and subassemblies.

The excessive vertical integration which unfortunately is characteristic of the electronics industry in Hungary is clearly unjustified on economic grounds and, therefore, must be eliminated. This, however, depends mainly on the development of our components industry.

The intellectual resources and capacities of the equipment industry should be concentrated almost exclusively on the creation of products and product families providing new and increasingly modern services and the design of new application systems, efficient market expansion and sophisticated customer service, in addition to well-organized development and production activity.

Thus, our primary expectation, as users, from the components industry is that it should provide us with parts, components and subassemblies which are:

- up to current international standards;
- of satisfactory quality;
- at the right price;
- in the right quantities;
- at the right time.

I would like to talk about the effects the fulfillment or nonfulfillment of this series of requirements. The situation and the problems are, of course, different in the case of active and passive components.

The expectations regarding up-to-date components are supported by economic considerations, as reflected in the production of one of our devices using components of three different generations. At the same time, I would like to highlight the great importance of component development in reducing the cost factor of our products. To do this, I will not discuss creative intellectual work which is built into the product to increase its performance. In Figure 1, I compare devices which perform the same function but are constructed using components of different generations. In the interests of a meaningful comparison, prices of components and materials are calculated at current price levels (in forints). The price level used is the average sale price of socialist countries. In highly developed capitalist countries, prices are about 50 percent lower. This is the result of many factors but is mainly due to competition. Domestic prices are 10 to 15 percent below average socialist prices in each column. Other costs are naturally lower in the case of domestic sales because substantial portions of special marketing costs are not necessary: these costs include export packaging and consignment costs. In the case of the first column, the product was built from transistors: it was designed in 1971 and we produced it for five years. The second column shows a design using integrated circuits. Production of this device started in 1975 and it is still continuing. In the third column we are considering a redesign of the same device using CMOS-LSI circuits. Planned production startup date is 1979.

A substantial reduction of the number of components may be noted as a result of the utilization of a new generation of components. Another consequence is less drilling, lower printed circuit board requirements, less soldering, all contributing to a reduction in direct labor and, as a result, direct wage differentials. At the same time, purchasing of materials, storage, inventory control, preproduction and other administrative requirements are also simplified. I could continue to list other factors resulting in reduced incidental costs and a consequent increase in profits and results.

The tendency toward the production of larger and larger functional units by the component industry resulted in the freeing of capacity and direct labor within the equipment industry. The figure provides a good illustration of the fact that the energy and effort invested in the development of the components industry is amply repaid in the equipment industry by indirectly providing resources for increasing national income.

I can state this in another way: if the equipment-manufacturing industry can utilize the most modern components in a timely fashion, then it can compensate for excess costs in a rational manner while avoiding price increases.

It is obvious that had we not concentrated on the utilization of more advanced components and the design of more modern devices, we would have been unable to compensate for more expensive production conditions.

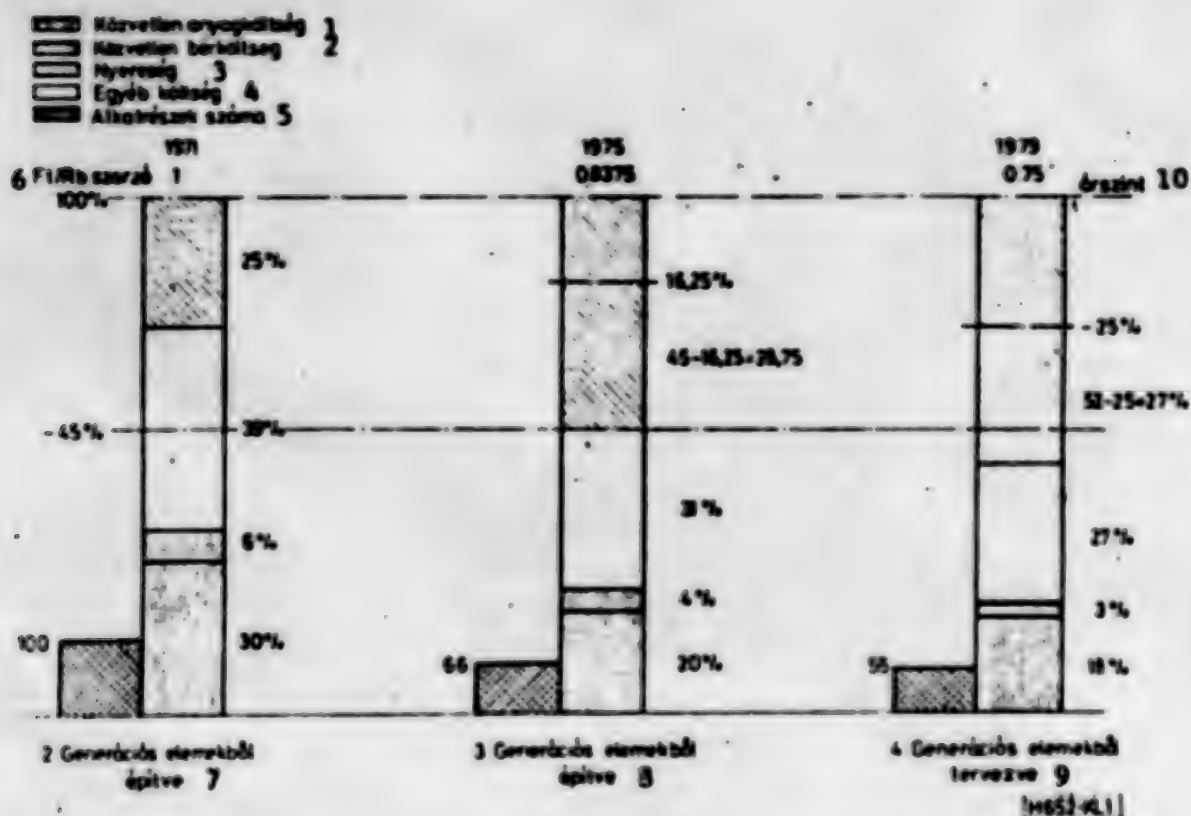


Figure 1. Cost factors of the same device built from components of different generations.

Key:

- |                            |  |
|----------------------------|--|
| 1. Direct material costs   | 7. Built from second generation components     |
| 2. Direct wage costs       | 8. Built from third generation components      |
| 3. Profits                 | 9. Designed using fourth generation components |
| 4. Other costs             | 10. Price level                                |
| 5. Number of components    |  |
| 6. Forint/Ruble multiplier |  |

These new generation components, of course, must be available at the right price and quality. Purchase opportunities must be assured. If we are able to make purchases only when Hungarian or other socialist industry has started manufacturing the component in question then this means that the lag is a consciously planned one and it will continue to increase instead of decreasing.

The high-quality work performed in this area by ELECTROMODUL which is playing an extremely important role in the development of Hungarian electronics must be evaluated very positively.



The demand for modernization relates not only to active and passive components but also to base materials. For example, in the area of sheet materials we must have plastic-coated aluminum sheets for enclosures, boxes and cabinets as well as suitably pure oxidizable aluminum sheets for decorative nameplates. This would enable us to eliminate an entire technological process (painting), with all of the related investment and other costs.

Speaking of modernization, we must also mention modern organizational methods. What is truly desirable is to have a higher components percentage in the second and third columns and a smaller percentage for wages and other costs. This will happen when supplies from common industrial bases are established. The components percentage of production must rise, in my opinion, to 20-25 percent for professional equipment and 30-40 percent for other equipment in the future.

This will be achieved only if the reconstruction of the components industry is combined with the establishment of joint industrial bases providing standard power supplies, standard circuits, enclosures and packaging. The percentage of components, discussed above, will be about 10 to 15 percent higher if tools, special devices and instruments are also provided by the joint industrial base and no longer figure in special production costs.

This goal, i.e., component supplies from a joint industrial base, must be achieved at the same time as modernized component supplies because this is the correct way leading to less vertical integration, and this is the basis for making competitive products.

To summarize, we expect that up-to-date components, parts and materials will become available through the creation of joint industrial bases.

The next expectation concerns a suitable price structure.

It has been said many times that, despite large-scale use of capitalist components, the equipment manufacturing industry is unable to produce sufficient volumes. One can assume that those who expect, with justification, an electronic equipment industry generating more currency and improving the terms of trade, do not sufficiently know the real background of the problems arising in this regard.

This problem area may be illustrated by the following series of diagrams (Figure 2). The price situation of components is investigated purely from the standpoint of capitalist markets. The price level is the possible price charted by a capitalist producer. We subtract 15 percent to figure the sale-price level of our product providing the same service. This reduction is due to import duties on our product, lack of market acceptance and non-existent service network. Actually, we are lucky if the discount can be kept as low as 15 percent.

In the case of the first column, the price level calculated for 100 units is correlated, depending on the design, with a certain quantity of components whose value equals 40 units. (This is the market price for a capitalist producer.) Of course, if this producer happens to be one of the large companies such as Philips, Thomson or Siemens, which possess their own component-manufacturing bases, then they can obtain components at production cost, as opposed to the market price. This results in the material percentage of the first column being reduced from 40 to 32. Profits, on the other hand, are increased. This gives them ample reserves to eliminate competition when it is in their interest to do so.

The second column shows the case when we produce the same design at home by purchasing know-how. The percentage of components remains the same, but the price content is increased by:

- transportation costs;
- import duties;
- customs handling charges;
- customs;
- foreign-trade price differential,

resulting in a combined excess price of 33 percent. Thus, if we obtain components from the same foreign source at the same market price, then our product requires 33 percent higher component costs. The 40 price units for components rise to 53 units. Lower direct wage costs arising from cheaper labor cannot compensate for this. Assuming identical incidental costs, the product would be losing money if the 20-percent average state refund for the machine industry were not available. This state of affairs is somewhat idealized because it assumes that 100 percent of the components is of capitalist origin. It is difficult to picture know-how purchases where components are 100 percent of capitalist origin.

The third column reflects a more realistic situation. Here, 50 percent of the components come from capitalist imports and the other 50 percent is either imported from socialist countries or produced domestically. This results in another surprise. If an integrated circuit is bought in the West, the price is half of what it would cost in the socialist market. These price levels are not very attractive. The price calculations of the domestic components industry are ruble-oriented which leads to unequivocal conclusions on the basis of the above. Thus, the price content of components will be greater: it will rise to 66.6 price units. Due to subsidies, there will still be some profits in capitalist markets; however, when the situation is evaluated by someone who is not an expert in the field, he may not subsume the subsidy under the components percentage. Instead, he may put it on the top of the column and be ready with a summary judgment to the

effect that the factory is making a profit only because of subsidies. As we can see, however, the subsidy is not even sufficient to compensate for the excess component cost. The 50-percent capitalist import of components, when projected on the market price (26.6/0.85), results in 31 percent. Unless this value can be reduced at least to the average of the KGM [Ministry of Metallurgy and Machine Industry] it clearly follows that the product is extremely unprofitable. As in the previous case, the situation sketched in the third column assumes identical conditions relative to the rest of the factors which, aside from rare occasions, is typically not the case.

Our technology, financial resources and production conditions are not as good. However, one of our biggest problems is the component situation.

One is justified in asking: what is the way out of the situation?

There are several solutions available.

--One of the most obvious is to create a suitable component industry since it is clear that imports from whatever direction will not enable us to compete with the products of highly developed capitalist industry. Of course, if the price level of the future modern component industry is significantly above the dollar price (calculated by taking into account current currency multipliers), then the volume of capitalist exports by the electronic-equipment industry will continue to be below desired levels;

--Another solution is contract work. In this case the price-increase factor of components is eliminated; however, this cannot be the long-range goal of an industry;

--The third solution is shown in the fourth column. It involves the design of a new product, domestically or jointly with foreign companies, which could provide the same service with the use of a smaller number of components through the utilization of Hungarian intellectual capital, i.e., an up-to-date solution with invention value. This means that we design a simpler and more sophisticated product. This requires a bigger research and development base for the equipment manufacturing sector. The direct labor saved through the utilization of up-to-date components may be retrained for research and development work. The reduced number of components made possible by the new design may result in a competitive product even with the excess costs factored in. The best solution, of course, is to have a highly developed and up-to-date component industry which can make products which can be sold on the capitalist market at a favorable price level because of the new extra services they provide.

Thus, there is a way out. It requires large-scale reconstruction of the electronics industry and, in particular, the component sector, coupled with recognition and encouragement of creative effort on every level.

5 Közvetlen anyagköltség  
 6 Közvetlen bérköltség  
 7 Nyereség  
 8 Alkalmazott töltés  
 9 Egyéb költség

Ft Rb/\$ arány - 2:10

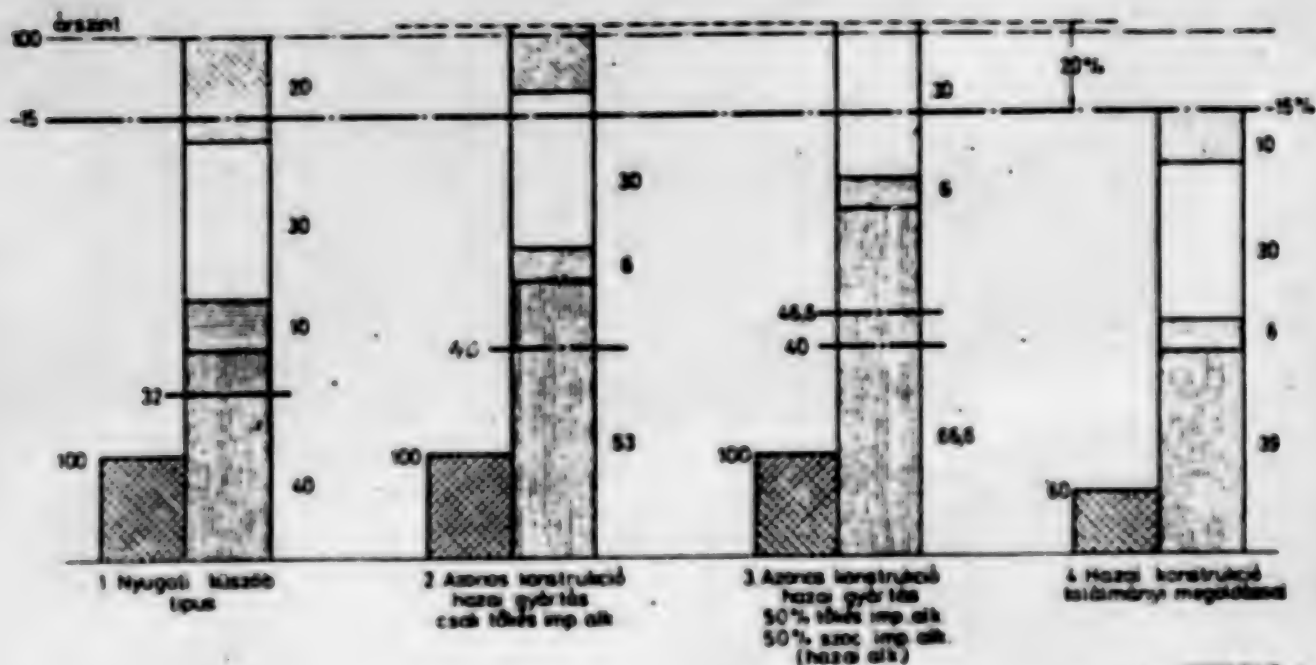


Figure 2. Cost factors of identical device using various components sources and designs




Key:

1. Western threshold device
2. Same design produced domestically using only capitalist import components
3. Same design produced domestically using 50 percent capitalist import and 50 percent socialist import or domestic components
4. Domestic design using our invention
5. Direct material cost
6. Direct wage cost
7. Profit
8. Components
9. Other costs
10. Forint-Ruble/\$ ratio: 2.1

By examining the component-cost factor of our products we arrived at the results shown on the following diagram (Figure 3). The percentages applying to the present situation were figured on the basis of the average of eight products characterizing our current activities. I do not wish to talk about this as the figure gives a good idea of the situation.

I would like to say a few words on the future, not so much in terms of the expected volume, but more in terms of the contents and trends in composition.



-  Aktiv elemek 1
-  RCL elemek 2
-  Egyéb passzív elemek 3



Jelenlegi helyzet 4  
1978



Várható helyzet 5  
1990

H852-KLX

Figure 3. Cost distribution of components used in professional electronic devices (measurement instruments)

**Key:**

- |                             |                             |
|-----------------------------|-----------------------------|
| 1. Active components        | 4. Present situation--1978  |
| 2. RCL components           | 5. Expected situation--1990 |
| 3. Other passive components |                             |

Active components, primarily integrated circuits, will play an increasing role while the importance of passive elements will decline. This is explained by the increasing role of applied computer technology in all branches of electronics which is leading to more intelligent products. Within other passive elements a substantial portion will be represented by multilayer PC boards and displays.

Multilayer PC boards, passive networks and hybrid circuits will be applied in many areas leading to substantial savings in labor, similar to monolithic integrated circuits.

In my judgment, user requirements are sharply increasing in these areas. I know that there are some who do not think so. However, if we want to look forward and try to forecast future trends, then in this particular case we have an advantage because of the 5- to 10-year lag. It suffices to look at

a device which is being manufactured in highly developed capitalist countries today and we can see what we can expect domestically in five years.

As you all know, our cooperative is engaged in the production of pocket calculators. When we take a look at these pocket calculators due to be released next month, which were developed in cooperation with a foreign firm and will be produced by us, and compared them to the model produced until recently, then we can see the enormous progress made in layered PC board technology within a short time.

Finally, I would like to talk about the user requirement which I mentioned earlier under the label "at the right time." This expectation is of paramount importance. If this is not fulfilled, the effect on equipment manufacturers will be disastrous in view of the economic feedback mechanisms. Timely supplies of components are a well-known and fundamental precondition of uninterrupted production and a steady output.

In the interests of production security we are defending against shortages by holding large stocks. This ties up development funds which are in short supply for everyone. The little we have is used to hold on to inventories and to replenish revolving funds, instead of reducing our shortage of resources. The need exists, therefore, for more modern and better-developed centralized inventory management.

The EMO [expansion unknown] that is charged with this question is looking for a solution. However, it alone cannot handle the problem. All equipment manufacturers must help in creating a good selection of standard components on the national level.

Standardization must be clearly and unequivocally aimed at serving the interests of large-scale production and it cannot become a break on progress and development.

In the interests of learning about and introducing new international results, there is a need to assure systematic imports of new components required for research and development as well as nonstandard components needed for custom production and the maintenance of imported devices. This should be done rapidly, as it is being done at present. Thus, the requirement of users in this area is to insure that the present well-tried practice not be changed in the interests of some supposedly better solution.

The initiatives taken by EMO (consignment storage, kit preparation, etc.) are important to help reduce inventories of manufacturers and we hope that the results will be as expected.

In the interest of quantity supplies at the right time, I feel that it is impossible to impose import ceilings as long as the problem of fully secure and satisfactory domestic component supplies remains unsolved. If such a ceiling proves necessary, it will inevitably lead to reduced production and the acceptance of such a reduction with all attendant consequences.

## SEJM COMMITTEE DISCUSSES FISHING FLEET, KRILL

Gdansk TECHNIKA I GOSPODARKA MORSKA in Polish No 5, May 79 pp 300-302

[Article: "Proceedings: Sejm Committee for Maritime Affairs and Navigation"]

[Text] On 24 January 1979 the Committee for Maritime Affairs and Navigation, at a session chaired by Deputy Jerzy Piskorz-Nalecki, considered the following:—state and prospects of the development of the seagoing fishing fleet as well as the premises of the program assuring further expansion of Baltic Sea catches;—fuel and power problems in maritime shipping;—the fulfillment of the 1978 maritime shipping plan.

The session was attended by representatives of the Ministry of Foreign Trade and Maritime Affairs, with Deputy Minister Edwin Wisniewski; the Planning Commission under the Council of Ministers; the Supreme Chamber of Control, and the National Association of Fishery Cooperatives.

Concerning the state and developmental prospects of the seagoing fishing fleet and the premises for the program assuring a further expansion of Baltic Sea fisheries, the Sejm deputies were provided with information prepared by the ministry, and complemented by Deputy Minister Wisniewski. A comprehensive program for the development of fisheries until 1990 which allows for the realignment of potential and resources to conform with the new legal-political situation concerning the fishing regions is being drafted. It can be generally stated that the development of deep sea fishery will occur in many directions: cooperative catches, catches in the open ocean in the region of the Antarctic, and catches of krill for livestock feed, technical, and human consumption purposes, with the expansion of open-ocean fishery and krill catches being contingent on the results of ongoing intensive research.

Deep sea fishery is based on a total of 127 fishing and service vessels, of which 63 trawlers are obsolete and have extensively worn equipment. Retirement of the obsolete units will be accompanied by acquisition of vessels adapted to new conditions and goals of operation.

It is expected that in 1985 the catches should reach a total of 735,000 tons, assuming the commencement of an industrial-scale exploitation of the open

ocean, the continuation of Arctic fishery, the maintenance of the volume of Baltic fishery at its present level, and the intensification of cooperative fishery in the nationalized zones.

The postulates of the comprehensive program for exploitation of the Polish fishing zone until 1985 comprise three sectors: state, cooperative, and private fishermen.

The expansion and maintenance of Baltic catches inclusive of bay and gulf catches at the level of 200,000 to 218,000 tons of fish annually is assumed. To this end, the expansion of fish hatchery centers in the coastal zone is needed. The fishery potential will be augmented by modernizing the existing vessels and acquiring new vessels. The technical conditions of many ports and bases must be improved. It is most essential to assure navigability at the three large fishing boat bases in Wladyslawowo, Leba, and Darlowo.

To improve the supply of fishing nets, the productive potential of the nation's only plant for fishing nets in Korsze must be expanded.

The intensification of offshore fishery will not be possible unless housing for fishermen is expanded. The governors of the coastal voivodships should be obligated to designate land for the construction of private homes and settlements for fishermen in coastal localities.

The problem of retired fishermen must be settled. They should be enabled to work without risking the suspension of their pensions.

Private boat fishermen have received allotments of coal and foodstuffs from "Baltona" on the same principles as those obligatory in the socialized fleet. The provision of subsidies for the purchase of new motor launches is expected.

Research into the Polish fishing zone will be expanded in the following directions: protection of resources, mariculture, forecasting of the deployment and state of fish resources with the object of enhancing the effectiveness of catches, fishing equipment, fishery technology, and fishery economics in the Baltic Sea. This is associated with the acquisition of a new research vessel for operation in the Baltic.

A new problem is that of the protection and supervision of the Polish fishing zone. This requires acquiring nine coast guard ships and three aircraft and one helicopter for aerial reconnaissance.

In view of the progressive eutrophication [sic] of the Baltic offshore waters and the increasing atmospheric pollution, environmental protection is becoming a major problem. The purity of the offshore waters directly affects their biological yield. It is necessary to build 23 liquid-waste-treatment plants, install 10 large facilities to combat atmospheric pollution, and adapt the fishing ports and all boats to the collection of wastes and discharges and their dumping in specified areas.



The development of Baltic Sea fishing is largely dependent on the development of the land facilities and fleet. It is expected that out of a total of 7,672,500 zlotys 49 percent will be allocated for the fleet and 51 percent for shore investments.

Other ministries, too, should join in implementing the program for intensifying the Baltic fisheries. The assurance of deliveries of motor vehicles, and of adequate quantities of packaging materials, nets, and fishing gear is particularly essential.

An accompanying report was presented by Deputy Bronislaw Antczak. The situation in 1978, in which the catches were smaller than in the 2 preceding years and the plan for deliveries of fish and processed fish products was fulfilled 87 percent, does not inspire optimism. The Fisheries Association has not yet prepared and is not capable of preparing a detailed and plausible program defining closely where and how the planned catches of fish can be accomplished on the scheduled scale during the years 1980-1985. It is thus necessary to wait and hope that the ministerial team will present a program in which it will consistently specify the volume of catches and market deliveries, the required investment outlays, and the economic effects. Without prejudging the scope of that program, it is desirable to postulate:-- that the ministry determine the volume of catches possible in the nationalized zones, with foreign cooperation; here it is advisable to work out precise instruments for cooperation, criteria for determining its effectiveness, and the geographical directions of that cooperation;--a more precise determination of the uses of vessels retired from primary operations; retirement following a 15-year operating period, as proposed by the ministry, should be adopted as a principle, but it should in no case be interpreted as consignment to scrap;--the determination of the prospects for and economic assessment of the profitability of catches of Antarctic krill as compared with the costs of obtaining fish protein and livestock protein; the Antarctic research expeditions conducted for more than 3 years now should progress to the stage of industrial introduction and appraisals of the feasibility and potential scale of these catches.

The postulates for the program for the management of the Polish fishing zone in the Baltic until 1985 outlined in an interesting and penetrating manner all the conditions of existence of Polish fisheries and ensuing nature of indicated operations until 1985. This comprises the operational, investment, and organizational activities of the state, cooperative, and private sectors on the Baltic, as integrated into a single joint ministerial plan. Allowance is also made for the social problems of the fishermen and the obligations of the local administrations as ensuing from the program. Certain aspects of the program, however, should be either elaborated or complemented or represented by a greater number of variants than he has offered. Namely:

- 1) The cost of Antarctic catches was 66 percent higher compared with deep sea fishery and 180 percent higher compared with Baltic fishery. There exist a common consensus that the thesis of the program's authors that

the waters of the Baltic should be exploited to the very limit of biological possibilities appears to be justified.

2) Similarly justified appears to be the tactic proposed by the program's authors for maximizing the activities of the Polish fishing fleet during the fishing seasons. This requires concentrating a sufficient number of ships within the fishing regions in season and assuring complete technical readiness of the fishing fleet. To this end, it is necessary to broaden repair and maintenance facilities, which are as yet insufficiently efficient.

3) It is difficult to accept as certain the planning of annual Baltic catches at the level of 218,000 tons. This figure is imprecise and can be verified only in practice. We may, moreover, face a formal-legal conflict, since the catch limit allocated to Poland under the Baltic Convention, plus the biological possibilities of the species not covered by that limit, implies a volume of catches on the scale of 190,000-200,000 tons, and moreover the 218,000-ton maximum cannot be an obligatory target for the enterprises since it is assured neither by experience so far nor by formal legal considerations.

4) A separate problem is deliveries of fishing boats and launches for the Baltic, as well as deliveries of engines and various equipment for fishing vessels. The aging of the fishing fleet during 1979-1985 will require replacing it with new units and adding extra equipment. It is necessary to devise designs of small and low-cost offshore boats for fishing within the zone. They could be designed for both offshore fishing and short-range deep sea fishing. Thus another variant of the structure of the new fleet, consisting of a smaller number of large boats and a greater number of small boats, should be considered.

5) The subcommittee for fisheries did not make any fundamental comments concerning the orientations of shore investments.

6) To increase the interest of the population (especially of youth) in offshore fishing in small localities, it is necessary to develop a set of promotional factors which would counterbalance in the mind of the young the various difficulties in which the occupation of a boat fisherman abounds.

7) The complete fulfillment of the program is feasible if the supply problems are solved. This refers to packaging materials, fishing gear, nets, means of transportation, and also navigation equipment and radar and sonar.

The proposed program completely disregards the problem of new personnel for all three sectors of Baltic fishery. The drafting of a program assuring the technical-economic exploitation of the Baltic would be incomplete without considering the human factor. The subcommittee believes that the problem of personnel should be the subject of a special session of the committee before this year is over.

The whole of the problems of fishery was extensively considered by the Sejm deputies in their discussions.

Certain of the problems raised were commented upon by the Director of the Fisheries Association, Julian Hebel. Polish fishery has entered the Antarctic region to catch fish, not krill. About 100,000 tons of fish could be caught in that region, and that is our basic accomplishment. As for krill, it is at present under study and the expectations are that it will be supplied to the market in about 1981.

Work on fish restocking is being steadily continued—at present most extensively in the waters of the Bay of Puck. In the long run, this work will be commenced in the waters of the Gulf of Szczecin as well.

Deputy Minister Wisniewski entirely shared the opinion of his cospeaker concerning the extension of the program to personnel problems.

There exist real opportunities for expanding the fishing fleet and catches. This is demonstrated by, among other things, the Peru question. In 1981, after all the planned 22 Polish fishing vessels are introduced into Peruvian waters, these waters will become the largest fishing region of Polish deep sea fishery.

An important problem is retirement of shipping. The fishing fleet, unlike the merchant fleet, has for a long time been solving this problem by selling vessels to foreign shipowners. This has led to a situation in which the fishing fleet cannot accomplish the tasks posed to it. This mistake is currently being repaired. The Peruvian example is an eminent proof of this. Recently the coastal press has been criticizing the use of vessels of the Polish Ship Salvage Company to protect the Polish fishing zone. We have to resort to this owing to the lack of sufficient shipping. It is expected that appropriate vessels will be built and take over the protection of the Polish zone.

The krill problem does not exist. It was created by the mass media. Krill cannot replace fish, and no assumptions to the contrary have been made. At this time krill catches on an industrial scale are not yet completely justified economically.

Summing up the discussion concerning the first item on the agenda, the committee chairman declared that information available to the ministry, the comments of the subcommittee and the comments by the Sejm deputies during the discussion provide a clear picture of the topic discussed. The committee has taken all this under consideration.

Next on its agenda, the committee considered the fuel and power problems of sea going shipping. Information on this topic, prepared by the Ministry of Foreign Trade and Maritime Shipping, was received in writing by the Sejm deputies. It was complemented by Deputy Minister Wisniewski. It ensues from that information that, in view of the fact that more than 97 percent



of the energy sources consumed by the ministry is represented by liquid fuels and lubricants, special importance is attached to thrifty consumption of these sources.

The cost of the energy sources at the ministry exceeded 7 billion zlotys in 1978.

To assure continuity of shipping activities, certain quantities of fuels must be acquired by ships directly in foreign seaports. The normal amount of purchase in foreign ports is to be considered 40-45 percent of the total consumption of fuel oils and 23-30 percent of motor oils. However, during the years 1976-1978 our ships have been acquiring much higher percentages of fuel oils in foreign ports. This was due to the decrease in deliveries of fuel oils to the ministry. Since the cost of purchasing fuels and oils in the capitalist countries is a major item in hard-currency expenditures, the ministry has defined in detail the principles for the refueling of ships in foreign ports.

The enterprises of the merchant fleet and deep sea fishing fleet lack storage tanks for liquid fuels as well as appropriate facilities for storing greases and lubricants. The ships of the merchant fleet and deep sea fishing enterprises are refueled in this country from the stores of the Petroleum Products Organization located in the area of the ports of Gdynia, Gdansk, Szczecin, Swinoujscie, and Kolobrzeg.

The area of the petroleum products storage facilities in the seaports is insufficient. As a result, shipowners receive smaller deliveries in many cases, thus entailing the acquisition of greater quantities of fuels in foreign ports or, in the case of lubricating oils, the replacement with foreign lubricating oils which is costly and even may entail extra demurrage.

As a result of the fulfillment of a comprehensive program of the Ministry of Chemical Industry, the necessary number of refueling ships for supplying ships with fuels and oils has been built in domestic shipyards. At present, the Petroleum Products Organization operates 14 refueling ships of this kind, which is adequate for satisfying the needs of the larger vessels. On the other hand, the problem of the supply of fuels by refueling ships to the smaller vessels has not been solved. This requires fuel ships with a capacity of 15-20 tons, which so far are not available to the Petroleum Products Organization. The Ministry of Foreign Trade and Maritime Affairs is making efforts in this respect.

To improve its fuel and power management, the ministry is taking various steps. Among other things, it is introducing standards for the consumption of fuels, lubricants, and electric power. In measure with technical possibilities, heavier and much cheaper fuels are being introduced for driving marine engines.

The special bonus fund has become a major incentive for conserving power and fuel consumption. The bonus per ton of fuel saved is 120 zlotys. In the ministry's opinion, the size of this bonus should be differentiated according to amount of fuel consumption per time unit, numbers of crew, and kind of fuel.



The dissemination of information on fuel and power equipment and conservation is being expanded and a broad research effort with respect to the conservation of fuel, power, and lubricants is under way.

The Sejm representatives commented on a number of other problems during the discussions. Additional information was provided by the Deputy Minister Wisniewski. The ministry has no program defining the savings in power plants of various types. Excessively rigorous program regulations governing ship construction might discourage potential contractors from among our shipyards. The ministry will strive to tighten the conservation requirements posed to shipowners introducing new ships into operation.

A fuel-supply agreement has been negotiated with the Ministry of Chemistry, particularly with respect to the smaller fishing ports.

The merchant fleet uses mazut, which results in greater engine wear. Calculations showed, however, that, in view of the rising prices of liquid fuels, the use of mazut is warranted.

The chemical industry is streamlining production and broadening its assortment. This requires enhancing the information provided to users (power services on ships).

The designing of new ship types is based on broad consultations. It appears that the savings achieved in the operation of shipping due to conservation measures can be greater than savings due to design revisions.

The indock facilities in our seaports are inadequate for most of the larger ships. Various new techniques, such as the use of scuba divers, are being introduced to clean ship hulls.

The committee took under consideration the information provided by the ministry.

Information on the fulfillment of the tasks of the 1978 National Plan of Economic Development was presented by the Deputy Minister Wisniewski. The ministry's plan for maritime shipping last year was fulfilled under difficult conditions. This was due to breakdowns in the fulfillment of export and import tasks, the insufficient transloading and manpower resources for servicing ships in ports, and the underdevelopment of the repaired facilities of the domestic shipyards. A number of organizational and procurement steps was taken to assure the fulfillment of the plan and to improve labor efficiency.

The global volume of cargo handled last year was 9.2 percent higher than planned, and 10.7 percent higher than the actual volume in 1977. The maritime shipping enterprises attained revenues 13.6 percent higher than in 1977 and 12.2 percent higher than planned. The hard-currency balance in maritime shipping was 6.9 percent higher than planned and 8.8 percent

higher than in 1977. In 1978, the plan targets for the conveyance of grain, liquid fuels, and lumber were exceeded. The shortfalls in the volume of other types of cargoes carried were due to, among other things, lack of railroad cars and insufficient supply as regards ore and irregularities in year-round supply as regards general cargo.

The plan of transloadings in our seaports was exceeded 2 percent.

The plan of catches was underfulfilled in 1978. Only 86.1 percent of that plan was fulfilled. The principal reason was the changes in the formal-legal situation of world fishing regions and the imposition of limits on catches in the fishing zones. Given the incomplete fulfillment of targets, the principal attention was focused on maximizing the supply of the consumer market, even at the cost of restricting exports and the production of feeds. The deliveries of fish and processed fish products were fulfilled 86.5 percent. The supply of freshwater catch was about 10,000 tons lower than planned (especially carp), which was partially offset by imports.

The export targets of Polish fishery were fulfilled 69.4 percent.

Investment outlays in 1978 were fulfilled 94.5 percent, of which construction and installation operations were 87.5 percent.

The fulfillment of last year's tasks made it possible to complete the construction of coastal facilities for the iron ore base in North Port, the construction of depot areas in Gdansk, Gdynia, and Szczecin, and the construction of docking and unloading facilities in Swinoujscie as well as of a number of fishery facilities, including the processing shop at the Odra, the marinating shop at the Barka, the net shop at the Koga, and numerous pavillions and stores.

The management of employment and the wage fund was correct in maritime shipping, but in industrial units the proportions between the fulfillment of tasks and the utilization of the wage fund were not observed.

The committee took under consideration the information provided by the ministry.

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## STRATEGY FOR INCREASING INDUSTRIAL EXPORTS EXPLORED

Bucharest REVISTA ECONOMICA in Romanian No 6, 9 Feb 79 pp 12-18, No 8, 23 Feb 79 pp 9-10, No 11, 16 Mar 79 pp 13-14, No 12, 23 Mar 79 pp 11-12

[Article by Dr Ioan Georgescu: "Maximizing Creative Efforts to Intensively Increase Romanian Exports" (Parts I, II, III, and IV)]

[Text] The position of the RCP regarding a greater potential for participation in the international division of labor along with improvements in the economic potential of the country, has been brilliantly confirmed by the growth of Romania's foreign trade. The rapid industrial development in the postwar period was thus reflected by the fact that foreign trade has grown more rapidly than the rate of world trade: while world trade has increased 14.3-fold between 1950 and 1975, at an average rate of 10 percent, Romania's foreign trade during the same period has grown 19-fold, at an average rate of 12.6 percent.

By the end of the last five-year plan -- 1975 -- Romania was thus able to surpass the worldwide average figure of \$450 trade per inhabitant; starting with \$28 of foreign trade per inhabitant in 1950, Romania succeeded in reaching \$504 in 1975 and \$570 in 1976.

Based on typical indicators for national economies, formulated by a group of Romanian specialists (1) using synthetic indicators for levels of socioeconomic development and for economic potentials, as well as the matrix multiplier for foreign trade, our country was placed in 1971 among countries with average and sub-average economic potentials, and with average participation in the world's economic circuit, showing at that time an obvious tendency to move into the group of countries with average economic potential and with intensive participation in world trade. The economic development data of the seventies justify this conclusion: during the 1971-1975 five-year plan a qualitative reversal occurred in the correlation between the growth rates of investments (Iv), of industrial production (Ip), and of foreign trade (Ic), in the sense that this correlation changed from the form  $Iv > Ip > Ic$ , to its inverse  $Iv < Ip < Ic$ , thus demonstrating the strong effects of intensive growth rates.

**Table 1. Correlation between foreign trade and other macroeconomic indicators.**

Indicators	1950-65	1966-70	1971-75	1976-78
Investments	7.5-fold	1.67	1.72	1.40
Industrial production	6.5-fold	1.75	1.84	1.36
Foreign trade, of which	4.78-fold	1.75	2.32	1.44
Exportations	5.19-fold	1.68	2.39	1.33

Source: Romania's Statistical Yearbook

The data in table 1 illustrates the qualitative leap achieved in industrial development, characterized by an intensive growth in the value of production (without a proportional increase in investment funds), and in the correlation of investments with industrial production --  $1.67 < 1.75$  for 1966-1970 and  $1.72 < 1.84$  for 1971-1975 -- together with the growth of foreign trade and exports as correlated with industrial production --  $1.84 < 2.32 < 2.39$  - during the 1971-1975 period.

This qualitative growth has of course been reflected in such indicators as the exchange ratio in foreign trade: from a value of 8:1 (import-export) in 1938, this exchange ratio has reached nearly 1:1 at the present time.

At the same time, it is extremely important to continue to monitor the economic efficiency of this increased participation in the international division of labor.

We therefore analyzed the changes in the proportion of exports as part of the gross national product (GNP), and compared it to the changes in the specific weight (quota) of Romania's participation in world exports (see table 2).

**Table 2. Proportion of exports in the gross national product compared to their proportion in world exports.**

	1971	1972	1973	1974	1975	1976
GNP (million \$)	15147	6770	18680	21910	26450	31079
Exports (million \$)	2101	2599	3693	4874	5341	6138
Proportion of exports (% of GNP)	13.8	15.5	20	22.2	20	19.7
Romania's proportion of world exports	0.6	--	--	--	0.6	0.6

Sources: GNP from "World Bank Atlas," 1973-1977 editions; Romania's Statistical Yearbook; "Types of National Economies."



The figures in the table show that although the proportion of exports increased by 8-10 percent during the period under analysis, Romania's proportion of world exports has remained unchanged. This proves that in order to maintain a quota (specific weight) in international exports, it was not enough to increase exports at an average rate of 18.6 percent during the respective period (as compared to an average annual growth of over 23 percent in international exports), but that it was necessary to also increase the portion of the GNP offered for exports beyond the average participation of the world's countries in exportation, which is 16 percent of their GNP (2).

This can be used as an indicator of the extensive growth in Romania's participation in the international division of labor, as well as of the reserves which are available to us to improve the range of exported goods. For a true appreciation of the possibilities for expanding our exports in the future, we can examine the world export situations of countries in the same group as Romania (group III), in terms of their "synthetic indicator of economic potential" (see "Types of National Economies").

The proportion of national exportation in world exports is higher for Austria -- 1.5 times, Belgium -- 5.7 times, Czechoslovakia -- 1.5 times, German Democratic Republic (GDR) -- 2 times, Norway -- 1.9 times, Holland -- 6.8 times, and Poland -- 1.8 times.

Following this macroeconomic analysis with a comparative analysis of the groups of goods in Romania's foreign trade and of the structure of international trade, we can draw a number of conclusions of direct practical significance (see table 3).

Table 3. Structure of exportation by groups of goods and groups of countries (1975).

Groups of goods	(A)	(B)	(C)	(D)
Machinery, tooling, and means of transportation	36.8	3.2	29.2	25.3
Chemical products	9.2	1.6	5.2	10.8
Fuels and raw materials	11.9	68.6	26.6	34.3*
Foods	11.5	14.1	10.0	10.6**
Other manufactured products	29.1	12.0	23.0	19***

(A) Developed capitalist countries

(B) Developing nations

(C) Socialist countries

(D) Romania

\* Including some processed non-food raw materials

\*\* Food products

\*\*\* Industrial consumer goods, construction materials, and accessories

Sources: UN Monthly Bulletin of Statistics; Romania's Statistical Yearbook

An overall analysis of the structure of exports at the beginning of the current five-year plan leads to the following observations:

The group of machinery, tooling, and means of transportation plays a smaller role in the structure of our exports, as compared to the place these products occupy in the structure of exports from developed capitalist countries and from socialist nations as a whole. This explains why Romania's importation of machinery, tooling, and means of transportation is still high (between 30 and 40 percent of the total imports during the 1970-1977 period), and why at the same time the degree of exploitation of mineral raw materials, metals, and fuels obtained through importations is still low (30-41 percent of our importations during the 1970-1977 period consisted of fuels, raw materials, and metals).

While this is the quantitative situation in the exports of machinery and tooling, let us now examine the qualitative aspects of exports in this group. Using the data published in the last edition of the collection of statistics "Romania's Foreign Trade," we can calculate the exchange ratio for some products in the group (as a ratio between the average receipts per exported product or ton, and the average payments per imported product or ton). For instance, the exchange ratio for some subgroups in the exportation of machinery and tooling has evolved as follows: in the case of "metal cutting machine-tools" the ratio went from 5.1:1 in 1965 to 5.5:1 in 1970, and decreased to 3.7:1 in 1972 (which means that in 1972, the value of an imported machine-tool was covered by the value of 3.7 exported machine-tools); for "stationary diesel engines" the exchange ratio went from 3.5:1 in 1965 to 4.2:1 in 1970, and to 4.5:1 in 1972; for "1 KW and larger electric motors" the ratio changed from 1:0.75 -- and therefore a favorable exchange -- to 1.5:1 -- an unfavorable one in 1970 -- and remained the same in 1972; for "excavators" the ratio decreased from 2.9:1 in 1965 to 2.6:1 in 1970, and 1.4:1 in 1972 -- reflecting a sustained improvement in the technological level of exportations; for "trucks" the exchange ratio during the period under analysis wavered from 2.9:1 in 1965 to 4.3:1 in 1970, and to 2.6:1 in 1972 -- for a clearly positive trend.

Of course, these examples are not intended to place under discussion the orientation of machinery and tooling exports, which represent an essential foundation of our current foreign trade, but are used merely to point out the reserves available for renewal and diversification of existing exportations.

We need only remember that only three decades ago, foreign businessmen could not believe that Romania manufactured tractors, considering such production totally incompatible with the country's general stage of economic development. But we cannot ignore the possibility that industry could demonstrate technical shortcomings which could affect the competitiveness of exportations.

A review of economic growth factors in the light of the restrictions and opportunities available for the exportation of our manufactured products, discloses the following restrictions: shorter supplies of raw materials and fuels imposed by escalating prices on these markets; increased protectionism, particularly on the markets of capitalist countries which hold a dominant position in the manufactured goods market (83.3 percent of exports and 62.7 percent of imports in 1975); difficult access to modern technologies for developing nations; and the requirement for higher investments in order to assure priority in the research and development of products. The opportunities that have been exploited, and especially the ones that still offer a potential for promoting Romanian exports, are: a rapid rate of restructuring of the employed population according to branches, which must be accompanied by a huge educational effort and by the directed process of constant training; the technical creativity potential of production specialists and researchers, materialized in higher product quality and competitiveness through technologic progress; a rapid rate of investments in modern production facilities which operate along advanced technologies; high performance organizational structures opened to new ideas, capable of assuring the synergy of production factors; and an expansion of international economic cooperation to jointly exploit complementary opportunities. These opportunities for effective and full valorification of production can be created by an intensive increase of exportations. In what follows we will show how this can be achieved using the example of some exported products in the machinery and tooling group, for which the optimum exploitation of these opportunities has opened significant outlets on foreign markets, and has earned very advantageous exchange ratios. The products used as examples here are petroleum equipment and bearings.

How did Romania come to be the world's second largest exporter of petroleum equipment? In the fifties, when the question arose of renewing and expanding the petroleum installations of the country and of creating a specialized sub-branch of machine construction, there also arose the option of resorting to importations or of creating a domestic technical documentation for building Romanian drilling installations. Assuming a great responsibility under the technologic and organizational conditions of the times, the specialists and technical personnel of the petroleum industry found it appropriate to undertake an effort of domestic technologic creativity in order to design installations adapted to the demands of our industry. As a result, the first Romanian drilling installation was constructed in 1957; of modern design, the 4LD-150 was of 95 percent domestic fabrication, without the acquisition of foreign licenses, at the same time creating the opportunity to form a new Romanian school for petroleum equipment construction. Had they limited themselves to this first generation, the petroleum equipment builders would have long ago lost their market; but year after year the equipment's performance was improved and its design perfected, with transition to diesel and electric motive power, ultimately reaching drilling depths of 10,000 meters. During the current five-year plan it is foreseen that 80 percent of the manufacturing inventory



will be renewed, that up to 40 tons of metal will be saved in the construction of derricks, that exports will be increased by about 50 percent, and that an advanced position will be maintained in exportations in this domain, with superior exportation economic efficiency.

In the case of bearings, commercial success is based on good economic cooperation between the specialized industrial central and SKF, which combined the opportunities of both partners. The efficiency of exports in this sub-branch is reflected in the evolution of the exchange ratio, which was 1:1.7 in 1965, 1:1.75 in 1970, and 1:2 in 1975, the latter meaning that the value of two imported products was derived from each exported one.

This is then the importance of basing the decision of renewing production and of choosing among various new products, on those products which are in their first generation throughout the world. In the light of this experience we can reach an extremely valuable conclusion for approaching exportation problems: the annual growth of the export load can no longer be regarded solely as a percentage increase in the volume of products exported during the previous year. This growth must always be associated with a greater proportion of products of high technologic complexity, which make a superior use of raw materials and energy, and which are eventually accompanied by an exportation of engineering services (consulting, engineering, know-how, technical assistance, service). This orientation makes it possible to remove from the exportation inventory low technology products, outdated products, or those which have reduced efficiency.

The alignment of the exportation inventory to the demands of the world market must be completed by the introduction of the advances of modern science in the organization of production and sales. Under the current international circumstances characterized by unstable currency and capital markets, it is no longer sufficient to obtain advantageous export prices, unless they are accompanied by guaranteed conditions of payment.

The rate of renewal and obsolescence of products can no longer allow delays in fulfilling foreign contracts. Such factors as prompt delivery, assured spare parts, and proper servicing, are becoming important vendor selection criteria as a result of the continued expansion of the buyers' markets. Similarly, an essential factor in penetrating a market and consolidating an export position under the current supply and demand conditions for manufactured products on the international market, is the ability to respond to, and the flexibility toward the market's demands. A scientific activity of marketing forecasting is therefore needed, followed by studies of market developments, so that a plant's research laboratory may have on hand a prototype of the new product which will replace the one being manufactured today. These matters must be given priority by workers' councils in enterprises that manufacture export products, as well as in specialized foreign trade enterprises, in order to exploit as efficiently as possible the material and human potential available to them through exportation.



The second group of exported goods that we will analyze in terms of its potential for intensive growth, is the group of chemical products.

The particular significance of intensive growth of exportation for this group of goods can be better understood if we consider on one hand the major objective with which it is faced -- that by the end of the current five-year plan, together with the machine building group, it will cover about one half of the country's exports, which means that by 1980 the proportion of this group's exports in the overall structure of exports will have doubled; and on the other hand, the fact that in recent years, one third of the country's needs of crude oil -- one of the major raw materials of the chemical industry -- have been met through importation, which once more imposes the need for a superior utilization of this scarce resource, whose price increases with each passing day. How is this goal met in terms of the evolution of the international market for chemical products?

#### Findings of Market Evolution Analyses

Today's technico-scientific revolution has provided a powerful impulse for the development of the chemical industry, offering new uses for existing chemical products, and creating a demand for new types of chemical products with special properties (plastics and synthetic resins as substitutes for metal in the machine-building and semiconductor industries, lubricants, paints and lacquers resistant to specific conditions, and so on). At present, the world's chemical industry manufactures more than two million products, of which 60-80 percent are intended for other industrial branches. This dynamic increase in demand has caused the production of the world's chemical industry to grow at an average annual rate of 8.2 percent during the 1960-1975 period, a rate which is higher than that of industry as whole, which is only 6 percent; accordingly, its proportion in the world's industrial production has increased from 9 percent in 1960, to 12.3 percent in 1975, and is estimated to reach 13.5 percent by 1980.

Integrating itself in the general orientation of the world's development, the Romanian chemical industry has undergone a particular rapid rate of development during the 1960-1975 period, namely an average of 21 percent per year, a figure which is higher than the average annual rate of growth of the total industrial production (13.8 percent during the same period). Consequently, our country has in recent years become one of the world's 10 leading producers of chemical products, and the import-export balance of our chemical industry has been positive since 1970.

A second characteristic of the development of modern chemistry -- also reflected in the development of Romania's chemical industry -- has been the rapid rate of the renewal process, with an almost complete renewal of the inventory during the last 8-10 years. This characteristic is also obvious in the orientation of our chemical industry development during the current five-year plan. Starting with the allocation of funds for research and development and for new investments, the continued development of chemistry is assured at an average annual rate which is higher than that of industry

as a whole (17 percent as compared to 11.5 percent). Domestic research and development assures 80 percent of the technologies used during the current five-year plan for 1900 new products and types of goods, all of them conceived and planned in the units of the Central Institute for Chemistry. The branch is also being expanded territorially, with investments being started in 11 counties which until 1975 had no chemical industry. Some of the large objectives of the current five-year plan are: the Petrochemical Combine of Midia-Navodari, the Buzau Chemical Fertilizer Combine, and the Tire Factory of Zalău. On this solid basis, the 1980 production of the chemical industry will be more than double that of 1975, together with a strong renewal and diversification. Powerful developments will be focused on the production of low tonnage polymers, and especially of vinyl, styrene, acrylic, and olefin copolymers; and a wider range will be found in synthetic resins for lacquers, paints, and castings, as well as in ion exchangers, and in auxiliary products for the textile industry. The development of elastomer production will be oriented toward modern products, such as polyisoprene and polybutadiene rubbers, enabling an expansion in the range of higher quality tires.

Dozens of dyes, more than 2000 lacquers, and about 750 types of inks are complemented with new paints and lacquers for motorvehicles and equipment, products with good adhesion, resistance to corrosion and tropical climates, and so on. To the existing 400 cosmetics and perfumes, 300 new products intended for the individual consumer will be added during the current five-year plan, as well as new types of chemical fibers with outstanding properties. New pharmaceuticals, herbicides, and other items are also being synthesized.

Romania's present economic potential in this branch has stamped its participation in the international trade of chemical products, so that our present exportation of these products amounts to 1 percent of the world trade -- far above our country's participation in the total world trade, which is only 0.6 percent. The export inventory includes hundreds of product groups which are traded in some 110 countries.

The fact that during the 1960-1975 period, the average rate of growth of the chemical industry production -- 21 percent -- was exceeded by the average annual rate of growth of exportation in this specialty -- 26.6 percent (a coefficient of 112.6) -- demonstrates the "external performance" of the production in this branch, and the orientation toward a modern, competitive structure in its development process.

#### **An Inexhaustible Resource: Superior Valorification**

The continued growth of the proportion of chemical products exportation in Romania's total exports -- up to 14-16 percent -- is of course primarily concerned with the essential restructuring of the export inventory in favor of highly processed products. One outstanding priority is the growth of the degree of exploitation of basic raw materials, among which crude oil (whose value amounts to more than 10 percent of Romania's total importation in

1976-1977). Compared to the average world level of utilization of crude oil as raw material in the chemical industry, which was 7 percent in 1977 and is expected to reach 8.5 percent in 1980, it can be seen that our country is achieving a much higher value for this figure. But as we shall see in what follows, the price differences on the world market for products obtained at various stages of crude oil processing, argue for a continued increase in the portion valorified by the chemical industry.

The present international circumstances, characterized by an increasingly difficult access to raw materials and fuel resources, also imposes on our country the need to analyze the efficiency of exports in terms of energy consumption per product, and consequently indicates a second direction of action: a reduction in the indirect exportation of energy. If we consider that the indicator of consumption of electric power -- 61,288 kWh/worker -- places this branch in second place, after the non-ferrous metallurgy and ahead of ferrous metallurgy, we can appreciate the importance of structural changes in chemical production, both for the domestic and the international markets.

These two criteria are equally valid both for optimizing the structure of exports by groups of goods, and for optimizing the structure of subgroups within the chemical products group.

In the first case, optimization might concern the possibility of transferring primary resources between the "fuels, mineral raw materials, and metals" group and the "chemical products" group. We know today that the processing of a ton of crude oil through a first stage yields products that are 2-3 times more expensive, through a second stage (monomers, for instance) 4-5 times more expensive, and through a third stage (polymers, for instance) 7-10 times more expensive. Further processing of petrochemical raw materials can result in such products as dyes, pharmaceuticals, or cosmetics, whose value is 20-40 times more expensive than that of crude oil or natural gases.

Even if at present the opening angle of the price scissors (basic products/manufactured products) tends to be smaller, price differentials remain significant, and circumstantial price variations -- sufficiently frequent and large -- bring incertitude to the petroleum products market.

In order to deepen the analysis of the chemical products group in terms of the potential for greater valorification of raw materials, attempts have been made to adapt profitability indicators to the specific conditions of organic chemistry production, in the sense of respecting technologic correlations between types of products. Consequently, the use of a specific indicator -- lei-currency per kmol (3) -- was proposed for low-tonnage chemical products. This indicator is calculated by adjusting the transaction price in lei-currency/kg, by means of a coefficient characteristic of any organic product with a definite structure (4). Starting from the premise that a 100 percent yield is obtained at each processing phase, this indicator was used to analyze the degree of



valorification of basic chemical products through their transformation into one or several of the six classes of utilization listed below. As the degree of processing increases, the profitability of fabrication, and therefore of exportation, grows vertiginously.

Classes of products	Degree of valorification
I. Basic chemical products	1
II. Organic intermediates	64
III. Pesticides	270
IV. Perfumes and cosmetics substances	540
V. Organic dyes	1000
VI. Active pharmaceutical substances	4000

Using this structure of increased valorification, which can correlate thousands of items with their respective profitabilities, it becomes easier to discover opportunities for orienting production and exports toward products with high economic efficiency, that include a larger amount of intelligent effort and highly qualified labor.

#### Energy Consumption Criterion in Exportation Structure

The second criterion which we will consider in analyzing the resources for intensive growth in the exportation of chemical products, is the consumption of energy per product.

Table 4. Proportion of exports in the production of some chemical products

Product	France *)	Italy *)	FRG *)	Romania **)
Nitrogen fertilizers	15.5	33.4	29.8	40.0
Calcium carbide	8.5	0	3.1	54.0
Caustic soda	34.7	31.5	32.5	42.3
Calcined soda	18.53	0.3	8.5	56.7
Carbon black	28.8 ***)	24.5	30.4	46.0

\*) 1976; \*\*) 1977; \*\*\*) 1975

The data in table 4 shows that even as early as 1976, the three West European countries demonstrated an obvious trend toward reducing the exportation of energy-intensive basic chemical products. The intensive growth of exportation in the case of our country must necessarily fall within the same international market trend. An additional argument in this respect is provided by the calculations performed by Dr Aurel Iancu and Rodica Miroiu in REVISTA ECONOMICA (Nos 8 and 47/78), to evaluate cumulated energy consumptions per product, using indicators which open a new chapter in the determination of economic efficiency -- and offer at the same time a valuable method for calculating direct and indirect energy consumptions, with possibilities of application to any branch of material production.



Table 5 lists the indicator of energy recovery in exportation, as a ratio between foreign unit prices and values of energy consumption (energy and fuel) per unit product, exclusive of raw materials, and expressed in equivalent tons of crude oil.

Table 5. Calculation of indicator of energy recovery in exportation for several chemical products.

Product	Price (\$/t)	(A)	(B)
Products with little processing			
Ammonia	135	2.420	0.77
Urea	160	0.220	10.67
Methanol	135	0.160	1.62
Caustic soda	200	0.917	3.03
Highly processed products			
HD polyethylene	800	0.630	17.7
Polypropylene	700	0.960	10.0
Polyester fibers	2000	0.955	29.0

(A) Total consumption of fuel energy (tons of conventional fuel/ton of product)

(B) Ratio of energy recovery (crude oil equivalent)

Data sources: Prices in dollars on West European markets from EUROPEAN CHEMICAL NEWS, December 1978, R. Manolache: "The Chemical Industry -- Main Consumer of Power and Fuel in the National Economy," paper presented at the International Conference on Industrial Energy, Bucharest, September 1978.

The data in the table indicates that the recovery ratio varies between 0.77 and 10.67 for the basic chemical products considered here, these figures being much lower than those obtained for chemical products with an intermediate and high degree of processing (10-29).

Considering the fact that energy (fuel) can be valorified either directly through exportation, or through a corresponding reduction of importations, one can understand the importance of restructuring the exports inventory by groups of products in order to intensively increase the value of this inventory.

The extremely large increases in exportation tasks for the last two years of the five-year plan, impose strong demands for assuring the needed goods and for their suitable valorification in exportation.

During this year, the increased exportation availability for products that are in high demand, such as synthetic rubber (SBR and polyisoprene), chemical fibers and filaments, and plastic materials (including processed ones), as well as the constant expansion of the geographic areas of trade

(during the last year, for instance, trade relations have increased with over 20 African nations, and trade has been intensified with Latin America and such traditional customers as the socialist nations or the USA, FRG, Turkey, and England), have created favorable circumstances for a continued expansion of Romania's exportation of chemical products.

For some products, particularly in the area of low tonnage chemistry, Romanian exporters are naturally encountering a sharp competition in launching new products on the international market, this competition coming from companies in developed capitalist countries, who are covering more than 80 percent of the world's exports of chemical products. That is why special attention must be devoted to the various product features which determine impeccable quality: meeting the level of international standards for such specifications as thermal stability, granulation, and purity; orienting production toward products that are in great demand on foreign markets, such as plastics for food packaging, recording discs, and industrial items; expanding the selection of HD polyethylene toward special uses, such as the cable and paper industries -- and concurrently restricting the offer of items for general use; extending the selection of copolymers, which are in great demand by various branches of industry and constructions -- and equally reducing the offer of those that are designed for general use.

Intensive development in the area of low tonnage chemistry can be illustrated by the original product Lasex, manufactured by the firm Hoechst, of which only 50 tons were produced at the time of its launching, but which brought an income equivalent to 1.5 million tons of sulfuric acid.

The fact that over 95 percent of the domestic market requirement of pharmaceuticals is met from our own production, is significant in terms of the current offer in this sector; but the most difficult problems are encountered in finding the most adequate forms for promoting these products on foreign markets through the most appropriate distribution channels. For such products as pharmaceuticals, cosmetics, paints, and dyes, consideration should therefore be given to tests, to be conducted by well-known foreign specialized institutes, which would certify their superior quality parameters, as well as to the launching of these products through joint specialized trade companies, and so on.

After the exportation of machinery, tooling, and means of transportation, and that of chemical products, the third group of manufactured products that we propose to analyze in terms of intensive growth, is the group of industrial consumer goods. Its positive feature has been the rising trend shown by this group in the structure of Romanian exports, from 1.3 percent in 1950, to 5.8 percent in 1960, and 18.1 percent in 1970, followed by a slight reduction to 16.1 percent in 1975 and 16.6 percent in 1977. The performance of the latter years -- while demonstrating an increase in absolute volume -- can be explained by the restriction of some markets under the impact of the economic recession, the protectionist measures adopted by some developed capitalist countries, and the appearance of new exporters on the international market, particularly in the area of light industry items.

Between 1960 and 1977, the value of our country's exportation of industrial consumer goods has increased 23-fold, reflecting the rapid development of the light industry, of the wood processing industry (furniture), of electrical and electronic products, and so on. Consequently, the foreign trade balance for this group of products has produced a surplus since 1960.

The growth projected during the current five-year plan for physical production in the various areas of the light industry (57.3 percent for fabrics, 70.7 percent for knits, 50.7 percent for clothing, 56.5 percent for shoes, 46.8 percent for fine household china, and 106.6 percent for enamelled kitchenware), in furniture, or through the program for developing the production of electric household appliances, creates favorable grounds for a continued expansion of the exportation of industrial consumer goods. The goal of raising to 22-25 percent the proportion of the group in the total exports of the country by 1980, can certainly not be reached solely through a larger volume of exported goods (extensive growth); it is necessary at the same time to restructure the exported inventory in favor of highly processed products, adapted to the technical-functional, modern demands of the international market, products which can derive higher value from foreign trade (intensive growth).

Starting with a classification of industrial consumer goods by subgroups: a) Clothing and fabrics; b) shoes; c) furniture; d) household machines and devices; e) household tools, utensils, and other items; f) miscellaneous items; we propose to use Pareto's law to examine the manner in which several subgroups of high percentage in our exports have evolved, and the specific resources for intensive development available to us, by viewing them in the light of the changing international market.

Table 6. Exports of several major subgroups of industrial consumer goods (percent of group total).

Subgroups	1960	1965	1970	1975	1977
Textile clothing	20.1	25.4	23.5	19.5	20.2
Knits	1.2	6.5	10.0	10.8	9.5
Cotton and cotton-type fabrics	--	5.3	4.3	--	--
Leather shoes	--	8.6	13.4	--	--
Wood furniture	24.5	34.5	23.1	26.2	23.7
Electric appliances	--	1.3	1.7	--	--
Glassware and fine china	5.2	1.6	1.0	1.8	1.8
Rugs	--	2.1	1.7	--	--

Source: Romania's Statistical Yearbook, 1978; Romania's Foreign Trade -- Collection of Statistical Data.

The data in the table shows that some of the basic items in our exported industrial consumer goods are clothing and knits, fabrics, and shoes, -- in other words, primarily a large group of clothing, which covered over 50 percent of the group's exportations during 1970. If to this we add

furniture, with a proportion of about 25 percent, we have the structure of more than three-quarters of our exported industrial consumer goods. Relatively large percentages are also taken by fur, leather, and imitation leather clothing, with a cumulative quota of 4.1 percent in 1972 (the last year for which value data is available), followed by glassware, fine china, rugs, and electrical appliances.

#### Exports Faced With a Buyer's Market

Given the important role played by clothing in the structure of exported industrial consumer goods, we will present some of the characteristics of the international market for these products, which must be considered in formulating their exportation strategy.

To begin with, it should be pointed out that in approaching the trade of individual consumer goods, we find ourselves in the midst of a buyer's market, whose essential characteristic is a strong segmentation into many consumer groups, differentiated by national features of consumption and by the particular socioeconomic aspects of the consumers, all of which are difficult to understand through simple intuition.

During the 1970-1975 period, the world's clothing trade has grown at an average rate of 22 percent per year, which is close to the rate of growth of world trade as a whole. This period is characterized by significant structural changes by groups of countries, in the sense that the proportion of developed capitalist countries in world importations has increased from 66 percent to 71 percent, particularly in favor of developing nations, which as a result of the development of their own light industries, have succeeded in meeting a larger portion of their domestic demand and in increasing their world exportations from 46 percent to 53 percent. Correspondingly, the role played by the developed capitalist countries in world exportation has decreased from 46 percent in 1970, to 31 percent in 1975. As a result of these structural changes, the balance of the world's clothing trade in 1975 showed a deficit (import-export) of 4.95 billion dollars for the capitalist countries as a whole, and a surplus of 4.85 billion dollars for the developing nations; the socialist nations, most of which are exporters of clothing, experienced a small surplus.

#### Major Trump Card: Novelty and Quality of Products

Starting with the observation that a large part of the outlets for clothing remain in the capitalist countries, it can be noted that the elasticity of demand on these markets is relatively weak as compared to the movement of prices and incomes, but that in return it acts as a major factor for the penetration of product quality. Today, quality in the area of consumer goods is defined with respect to the novelty of products, to fashion lines, to the novelty of fabrics, to the relative contribution of design, and so forth.



For instance, novelties in the clothing area can be: a new fashion, design of products with greater functionality expressed in the fabric's ability to mould, wrinkle-free treatments, dirt-repelling treatments, or ease of maintenance and durability, obtained through various blends of natural and synthetic fibers. It is estimated that today, a clothing exporter can remain in business only if at least 80 percent of his line is composed of new products.

The persistence of cotton as basic raw material in the clothing and knits industry -- especially for knit underwear -- as well as that of natural leather for shoes, presents our steadily developing processing industry with special problems regarding the superior exploitation of these imported raw materials, and their incorporation into competitive products of high quality, which will derive the highest value from the highly qualified labor and creativity of the specialists in our light industry.

At the present time, the rapidly changing market, both in terms of product policy and of distribution, raises the highly acute question of the reputation and position that an exporter succeeds in gaining in a given market, and the level to which he is introduced into that market (proportion of his product in total importations), so that he will not seem to be placed in the position of an occasional exporter who leaves the market at the slightest recession. More than anywhere else on the consumer goods market, the foreign trade of clothing and shoes assumes the form of a continuous collaboration between supplier and buyer, for the timely preparation of fashion collections, and for the launching and effective adaptation to concrete volumes and structures of demand for any given item. A consolidated position on a given market through buyers -- well selected importers -- enables a scientific approach to export strategy, formulated together with the buyers, and based on specific features such as: curves of fashion adoption by segments of consumers, changes in the ratio between standard and fashion items, and consumer usages.

#### Condensed Life Cycles and Flexible Offers

The life cycles of fashion items has been condensed (from about two years two decades ago, to less than one year at present), together with the greater dissemination of fashions among most consumer segments. This trend is also impressed on the delivery schedules requested by foreign customers, which have also changed to reduce the time available between the placement of orders and dates of delivery. Under these conditions, the times available to fill orders for clothing knits, for instance, although normal (several months) for domestic supply, become impractical for foreign orders. Most often, this competition is won by small and intermediate-size enterprises, with great manufacturing flexibility, who can obtain supplies from several alternate sources.

The large role played by distribution costs (about 50 percent) in the retail price of consumer goods, as well as the rapid rate of renewal of inventories in stores, make it impractical today to maintain goods in wholesale warehouses, as a result of which trade through wholesale importers is

decreasing constantly. The international market is consequently undergoing a process in which importation is being taken over by independent retailers, or those associated in central purchasing organizations, and by chains of stores; this phenomenon currently exists in many developed capitalist countries, as well as in some developing nations.

To be sure, this form offers advantages to the exporter, insofar as it eliminates the wholesale importer link in relationships with local markets. But at the same time the exporter must be prepared to enter into this form of distribution, in the sense of being able to offer retailers models whose demand on local markets has been tested, and of assuring deliveries at the rate of sales, while simultaneously participating in the advertising support of his goods. This trend toward shorter distribution chains can also be met by the creation of joint foreign trade companies. For instance, the Hungarian foreign trade enterprise Hungarotex, which specializes in clothing and knits, has created joint trade companies on its major markets -- England, FRG, Spain, Holland -- and has also installed its own representatives in more than ten other countries. This distribution formula enables a very efficient adaptation of sales structure to market demands, with joint companies also gradually assuming the role of local market distributors. Another new and rapidly developing form of distribution, is that of catalog orders, which is already widespread in the sale of consumer goods in West European countries.

In conclusion, it can be seen that the exportation of clothing can be intensively increased even more rapidly by radically changing the approach to the organization of production and marketing, and by a dynamic, real-time management of export operations.

In analyzing the approaches to an intensive growth of exportations during the current five-year plan, we have examined the export of machinery and tooling, of chemical products, and of clothing.

We will now proceed to study the opportunities for intensive growth in the exportation of household electric appliances, by presenting some features of the need to expand the exportation of these items.

#### A Dynamic, Growing Market

Electric appliances can become a major sector in the exportation of consumer goods. During the sixties, appliances made a modest value contribution to the total exportation of industrial consumer goods. During 1970, for instance, the cumulative exportation of 20.5 percent of the production of radios, 4.5 percent of the production of TV sets, 7.3 percent of the production of electric washing machines, 13.7 percent of the production of refrigerators, and 24.4 percent of the production of gas ranges, represented only 1.7 percent of the value of exported industrial consumer goods.

A notable point is the dynamic evolution of the world demand for electric appliances, under the pressure of such factors as: greater urbanization, the entrance of an increasingly larger number of women in employment, higher incomes in the major importing zones, and higher expectations for civilization and comfort. During the 1970-1975 period, for instance, the world's importation of household appliances has grown from 1. to about 4 billion dollars. In 1975, the geographic distribution of this great demand was as follows: 63.7 percent in Western Europe, 12.2 percent in North America, and 6.1 percent in the Near East, followed with percentages of 3.2-3.7 percent by the European socialist nations, Oceania, Latin America, Africa, and the Far East. The large volume of importations in Western Europe can be explained by the intense mutual exchange of appliances among the Common Market countries; but a spectacular increase has been experienced on the Near East market, as a result of a growing buying power on the part of the petroleum producing nations. In general, a continued development of importation demand can be anticipated for the developing nations, because a gap will persist between domestic production and consumption. Given these trends, it is expected that the world demand for electric appliance importation will double by 1980.

Table 7. Comparative changes in total industrial production and in the production of the electrical and electronic industry.

	1960	1965	1970	1975
Total industrial production	100	190	334	616
Total electrical and electronic production	100	288	322	2500

Despite the fact that the total production of the electric appliance and electronic industry has increased at a much more rapid rate than that of the industry as a whole (see table 7), the percentage of our exportation of industrial consumer goods has moved quite slowly, from 1.3 percent in 1965, to 1.7 percent in 1970. And compared to some European socialist countries, a substantial gap still exists in our exportation of household appliances (in 1975, Romania's export was 9 times smaller than that of Bulgaria, 11 times smaller than Hungary's, 60 times smaller than that of GDR, and 15 times smaller than Poland's).

This is perhaps the occasion to observe that the insufficiently rapid rate of production renewal and diversification in this sector has placed its imprint on the structure of our exports. There still remains to adopt the production of a fully automatic washing machine (the only one that could still be sold on the western market), of a dishwasher, of a heat-accumulating stove, of an electric multi-purpose mixer for the kitchen, and of new components for the existing range of electric sewing machines. According to specialists in the branch, the introduction of a hair dryer into production took as long as that of a sea-drilling installation.

## Specialization, a Component of Competitivity

One of the major causes for this state of affairs is the lack of specialization of some enterprises in the production of household appliances, as in the case of sewing machines, washing machines, vacuum cleaners, as well as bicycles and mopeds (in another subgroup of consumer goods), a situation which has also existed for some time in the case of refrigerators. This lack of specialization carries with it a dilution of concern and responsibility, and the possibility of value substitution in fulfilling plan tasks with other products in inventories (in machine-tools or motorvehicle accessories, for instance).

Moreover, electric appliances are still given relatively much less attention within our machine building industry, than the interest shown in gas and electric ranges within the light industry. Whereas in the light industry (namely the Central for the Household Articles Industry), products such as cooking ranges focus a maximum of attention, being the items with the highest value, in the machine building industry household appliances play an entirely insignificant role in the volume of production and exportation, and research and development concerns are primarily oriented toward the large problems raised by the construction of actual machinery. It is interesting to note that out of 100 electric appliances produced in Romania in 1975, 80 percent were from the Machine Building Ministry and only 5 percent from the light industry.

Table 8. Exports in the production of durable goods (\$).

Product	1965	1970	1975	1977
Radios	--	20.5	33.7	43.3
TV sets	--	4.5	5.7	18.1
Washing machines	11.6	7.3	9.2	8.6
Refrigerators	--	13.7	17.3	6.3
Gas ranges	30.0	24.4	14.0	29.4
Passenger cars	--	--	31.5	19.3

## Sales Organization: A Crucial Question

Just as in the case of the production structure, a lack of specialization is also apparent in sales, where a complete range of household appliances could be offered for sale by a single foreign trade enterprise. At present, these items are dispersed among the Romait, Electronum, Ilexia, Tehnoimport, and other ICEs (Foreign Trade Enterprises). But since the current importation of household appliances is increasingly carried out by retailers, who sell a complete range of appliances, requests for bids concerning cooking ranges, refrigerators, and household articles, for instance, must be circulated to three enterprises, a situation which causes delays or endangers the completion of some exports through failure to be "passed on" to the other enterprises.



In this respect, one should also point out that a closer cooperation between the machine construction industry, the metallurgical industry, and the light industry, could play an important role in accelerating the rate of renewal and diversification of the range of household appliances and articles, by satisfying the demand for micromotors, stainless steel, and so on.

And finally, another problem which requires greater attention in order to promote the exportation of electric appliances, is the adoption of international regulations and standards. If we consider that international standards are in most cases the distillation of many years of study and experiments, and that they offer vast documentation on the best solutions found throughout the world, and sometimes applied on an international scale, we can understand the need for an active policy for integrating these results into our own standards. Although most of the national standards -- for 60 countries -- and the recommendations and stipulations of international organs, including those of the International Electromechanical Commission, can be consulted by product designers at the library of the Romanian Institute of Standards, in Bucharest, they still have not taken their proper place in the activity of designers and researchers, and have not become a constant concern in the innovation process.

The concerns for indentifying and fully utilizing intensive approaches for increasing Romania's exports are part of the general orientations regarding the country's socioeconomic development for the 1981-1985 period, which among other things indicate the exportation of highly technical products in the electric and electronic fields, a sustained concern for maintaining the technical operation and quality of products at the advanced levels found throughout the world, as well as a constant study of international trends and effective adaptation of manufacturing to the demands of foreign markets.

#### FOOTNOTES

- (1) Cornel Burtica (coordinator), *The World Economy -- Types of National Economies*, Ed. Politica, 1977.
- (2) Calculated for 1974 by the authors of "Types of National Economies."
- (3) P. Scirlete, "Increased Profitability Through Greater Processing," *VIATA ECONOMICA*, No 5/1974.
- (4) For instance, to calculate the profitability of butyl acetate (foreign price: 208 lei-currency[l.v.]/kmol), which is prepared from 1 mol butylic alcohol (118 l.v./kmol) and 1 mol acetic acid (72 l.v./kmol), the expression reads:  $208 - (118 + 72) = 18$ . Taking the ratio of 18 to the export price of 208, we obtain the valorification of the component materials as 9 percent.

PARTY JOURNAL STRESSES ROMANIA'S ACTIVE ROLE IN CEMA

Bucharest EPA SOCIALISTA in Romanian No 12, 20 Jun 79 pp 18-20

[Article: "The Active Participation of Romania in Development of Collaboration Within the Framework of CEMA"]

[Text] Created three decades ago within the framework of economic meetings of representatives of Bulgaria, Czechoslovakia, Poland, Romania, Hungary and the Soviet Union, the Council for Economic Mutual Assistance (CEMA) has expanded during the years of its existence and has continually diversified and developed activity, embracing an increasingly greater number of economic fields and branches as well as areas of science and technology. The "complex program" adopted at the 25th session of the CEMA, which was held in Bucharest in 1971, marked an important point in developing the activity of the council. Drawn up for a relatively long period of 15-20 years, the "complex program" reaffirmed the viability of the fundamental principles and basic objectives of collaboration and confirmed the methods and forms for continuing collaboration among the member nations, providing an ensemble of concrete actions in economic and technical-scientific cooperation. During the 32nd session of the council held last year in Bucharest, the first special long-term collaboration programs were adopted; these long-term programs were designed to contribute to satisfaction, under increasingly better conditions, of the requirements of the member nations for fuels, energy and raw materials, food products, machinery and equipment, and modern technologies.

The experience of the thirty years of collaboration within the framework of the CEMA has demonstrated that the expansion of multilateral collaboration among the member nations and the diversification in its content and forms have had and do have as a theme the social-economic development of each member nation and the development of the creative activity of each people, who, under the leadership of its communist party, have achieved remarkable results in all fields. As the member socialist nations achieved progress, new conditions were created for the amplification, diversification and improvement of collaboration among these nations. At the same time, together with its own increasing efforts, the collaborative relationships within the CEMA made a contribution to consolidation of the technical-material base of socialism and to the strengthening of the economic, scientific and technological potential of each nation.

A member of the CEMA since its establishment, Romania has consistently acted for development of economic and scientific-technical collaboration with the member nations and has made an active contribution to the efforts designed to achieve a continued improvement and increased effectiveness in the activities of this organization so that it would fulfill the purposes for which it was created in the best possible manner and so that it would fulfill the objectives and attributed established by statute for it under satisfactory conditions.

The wise policy of the Romanian Communist Party for development of the technical-material base of society and the broad, profoundly creative program for sustained economic growth and application of the results of modern science and use of the most advanced techniques -- with approximately a third of the national income being allocated for this purpose -- have mobilized the energies of the entire people, while the significant results achieved in the economic field, in increasing the standard of living, and, in general, in the achievement of multilateral progress on the part of our society have also created conditions for participation in an increasingly broader and more diversified collaboration within the framework of the CEMA and intensification of Romania's collaboration with the other member nations. Great progress has been achieved in development of the production forces in the last three decades, with Romania being transformed, within the course of a period which is short from a historic point of view, into an industrial-agrarian country which is under full development, development which is the fruit of the sustained efforts of our entire people under the leadership of the party. For instance, in the period 1950-1980 our country realized an average annual rate of growth of 12.7 percent in industrial production and 10 percent in national income. Industry, agriculture, and the entire national economy achieved remarkable results. The national income and the social product increased and this was reflected in the continued increase in the standard of living of the entire people.

The intensification in our country's participation in the development of collaboration and cooperation within the framework of the CEMA on the basis of these historic achievements shows Romania's decision to implement the provisions of the "complex program" and the importance which it accords to the role played by the Council for Economic Mutual Assistance. Romania is participating in realization of about 200 multilateral agreements concerning international specialization and cooperation in production, scientific-technical collaboration, foreign exchange-financial and credit relationships, commodity shipments, and so forth. Together with the other interested members of CEMA, our country is participating in the construction of large facilities in the cellulose, asbestos and ferroalloy industries, in utilization of natural gas deposits in the Soviet Union, and in construction of a nickel and cobalt plant in Cuba, with Romania receiving appropriate quantities of these products in return on a counterpart basis.

Romania is also participating directly in the activity of specialized international economic organizations and unions created by the member nations of the CEMA in various fields: the interconnecting of national energy systems;



the joint use of freight cars; the reciprocal production and delivery of iron, steel, chemical, and electrotechnical products and bearings; the use of nuclear energy for peaceful purposes; the exploration of space, informatics; banking and financial activity; railroad activity; postal activity; and so forth. Commercial trade between our country and the other member nations of the CEMA has been expanded and intensified. Compared with 1950, the volume of this trade increased in 1978 by 13 times, while compared with 1965 it increased by 3.8 times. During the present 1976-1980 Five-Year Plan, the value of the trade called for in long-term commercial agreements signed by Romania with the other member nations of the CEMA increased by about 90 percent compared with the level realized in the period 1971-1975. In 1978, about 40 percent of Romania's total foreign trade was with the socialist member nations of the CEMA.

Concomitant with the increase in the volume of trade, there was also a gradual improvement in the structure of such trade, particularly through realization of an increase in the proportion of machine building products. Romanian exports of machine building products called for in multilateral specialization agreements represent more than a third of the total exports of machinery and equipment from our country to the other member nations of the CEMA. At the same time, there has been an increase in the exports of chemical industry products and durable industrial goods. The proportion of these three groups of products in Romanian exports to the member nations of the CEMA increased from 26 percent in 1960 to 59 percent in 1970 and to 61 percent in 1977.

In the three decades of activity of the CEMA, there has been a crystallization in the principles and norms which form the basis for economic and scientific-technical cooperation and collaboration and their improvement. Our country demonstrates a constant concern for ensuring that all the activity of the CEMA is carried on in accordance with the norms and principles agreed to by all the members of the organization and contained in the Statute of the CEMA and the "complex program." "Romania," pointed out comrade Nicolae Ceausescu, "accords special attention to development of collaboration within the framework of the CEMA. We are in favor of and we support intensification of collaboration and cooperation among the member nations of the CEMA on the basis of equality under the law, respect for national independence and sovereignty, and the interest of each party and mutual advantage for the purpose of achieving a closeness and equalization of their levels of development and an acceleration of their progress on the road to socialism and communism."

Placement of all collaboration activities within the framework of the council and also placement of the ensemble of relationships among the socialist countries on the basis of these principles, along with constant respect for these principles, constitutes the guarantee for the effectiveness of the activities of the CEMA and offers the most favorable possible framework for a fruitful collaboration, assuring development of democratic relationships and the possibility for each member nation to participate actively, under conditions of full equality, in making decisions and in organizing and carrying on mutual collaboration. Proceeding from these principles, the member nations of the



CEMA have adopted statutes in the fundamental documents of the council that expansion and improvement of mutual collaboration should be carried out on the basis of free consent on the part of the member states participating in those cooperation programs which are of interest for them.

The national economies of each country are distinct entities, with different levels and structures of development. Each party, each state, knowing the needs for the social-economic development of its country, as well as the existing possibilities and specific conditions, is the only authority in a position, in virtue of the rights and responsibilities invested in it by the people and society, to establish the directions and objectives of development, the ways and means for realization of such development, and to exercise fully and completely the prerogatives given them in managing social-economic activities and the construction of socialism.

Expansion, diversification and improvement of collaboration within the CEMA can only be achieved by proceeding from a strengthening of the role of the unique national plan for social-economic development of each nation, an increase in the role of the communist party and the socialist state, and a continued strengthening of the unique and indivisible socialist characteristics of each people -- all of these constituting inalienable attributes of each sovereign and independent socialist state and primordial requirements for the progress of each nation. Any point of view which calls for the establishment of suprastate organisms or supranational forms of planning and property is completely unacceptable since it is incompatible with the fundamental principles agreed to and contained in the basic documents of the Council for Economic Mutual Assistance.

It must be pointed out that the fundamental principles of relationships among the member nations of the CEMA constitute a unitary, indivisible whole. Only respect for all these principles on the part of each and in relation to all others can guarantee the development of international relationships which will stimulate the development of each socialist nation and will constitute an effective international framework for development of cooperation can offer the example of the new type of relationships among states and can increase the prestige and influence of socialism in the world.

In order for the new system to be affirmed on the world level, it is necessary above all for each socialist country to fulfill successfully the goals of socialist construction and to resolve the complex problems of economic and social progress. When stating that the fundamental objective of collaboration within the CEMA is acceleration of the development of each economy, the development of each member nation, our party, our country is proceeding from this premise, a premise which history continually confirms. "We believe that this collaboration must contribute," said comrade Nicolae Ceausescu, "to the development of the economy of each nation, to a strengthening of the technical-material base of socialism in each country, to the creation within each member state of the organization of the conditions necessary for establishment of a communist society. It is in this that we see the prime obligation and

principal directions of collaboration among the member nations of CEMA, because only in this way will socialism be able to prove that it is a superior system from all points of view."

The socialist countries started construction of socialism from different stages of development; in spite of the progress achieved and the relative closeness realized in their economic levels, there are still substantial differences in development of the forces of production, in work productivity and in standard of living. Collaboration among these countries must contribute to realization of a closing of gaps and an equalization of the levels of economic development in all the member states of the CEMA and must contribute to a greater degree to acceleration of economic progress, especially in countries which started from a lower level of development. This, obviously, is not a goal, a desire of a subjective nature, but rather an objective necessity, an essential imperative, which corresponds to the laws governing development of a socialist society. Under present day conditions, where the consequences of international relationships of domination and inequality imposed by imperialism still persist and where growth in economic gaps is proving to be one of the most acute problems in development of the contemporary world, closing the gaps and equalizing the levels of economic development in the socialist countries will demonstrate the superiority of socialism in organizing international economic relationships and the capacity of the new system to provide general progress, prosperity and a good life for all nations.

In this light, realization of the provisions and actions included in the Statute of the CEMA, in the "complex program," and in the special long-term programs for collaboration in respect to closing gaps and equalizing the levels of economic development of all member states is of special significance and great importance.

During the three decades of activity of the CEMA, extensive experience has been acquired in respect to the methods and forms of collaboration. Practice has proved the great importance of coordinating national economic plans -- accomplished through mutual consultations -- as the principal method for organizing economic and scientific-technical cooperation in accordance with the interests of each state and of all member states. Life has proved beyond any doubt that this method offers a suitable framework for realization of understandings in the principal fields of economic collaboration and for signing of commercial agreements and conventions for cooperation over a long period.

Participating in realization of a large number of multilateral collaboration agreements, our country accords great attention to expansion, specialization and cooperation in production, especially in the field of heavy machine tools and special machine tools with command programming, chemical equipment, crude oil processing equipment, metallurgical equipment, etc. For some of these products, Romania is interested in realization on its own territory, with the joint efforts of the member nations of the CEMA, of modern production facilities, with some of the products produced being delivered to the participating socialist countries.

Together with the other countries in the CEMA, Romania is also acting to intensify scientific-technical collaboration for solving some important problems associated with promotion of technical progress so that in this way it can assure technology transfer and the access of all countries to the new achievements of science and technology and to modern techniques. Our country is acting in a special manner for orientation of scientific-technical collaboration to a greater degree toward resolution of some of the problems on which more accelerated growth and modernization of production forces in each of the member nations of the CEMA depend.

Romania is giving special attention to realization of the special long-term collaboration programs. In order to increase the utility and effectiveness of these programs, our country feels that attention must be concentrated in the direction of fuller satisfaction, under better conditions, of the requirements of all the member nations of the CEMA for raw materials, fuels, energy, modern equipments and advanced technologies, as well as realization of concrete cooperation actions in agriculture and the promotion of efficient forms for stimulating exports of agricultural and food crops.

Romania feels that the existing organizational system, as well as the structure of the organs of the CEMA, meets the current requirements for an intensification of mutually advantageous multilateral collaboration and that the fundamental principles of mutual collaboration listed in the Statute and in the "complex program" provide a suitable basis for continued development of this collaboration. At the same time, our country is seeking to improve the activities of the CEMA organs on the basis of the Statutory norms and principles so as to achieve a deepening of the democratic character of its activities, to promote more effective modalities for solving concrete problems in mutual collaboration, and to eliminate the phenomena of formalism so that the CEMA organs will make a more efficient contribution to amplification and intensification of cooperation in production and in scientific-technical areas among the member states, as well as to acceleration of their economic progress.

The realistic, constructive character of Romania's participation in the CEMA is reflected in all of its activity directed toward carrying on a broad cooperation among the member nation for the purpose of identifying multiple forms, which, under constantly improving conditions, are likely to satisfy the requirements of each country for economic and social development. At the same time, our country is consistently acting for development of its relationships on multiple levels with all the other socialist countries, in the spirit of unity and solidarity of the forces of socialism.

In accordance with the imperatives of contemporary development, imperatives which cause each state to seek to move as rapidly as possible on the road to progress and civilization in order to be included as an active factor in the international division of labor and in the exchange of material values, Romania is developing ample collaboration and cooperation relationships with all states of the world. As a socialist country and at the same time as a developing country, Romania is seeking to expand collaboration and cooperation with



all the developing countries and with unaligned states, actively supporting the efforts made by these countries for liquidation of underdevelopment and working intensely for construction of the new international economic system. In a spirit of peaceful coexistence, our country is also expanding economic and scientific-technical relationships with the developed capitalist countries, with all states, without regard to social system. Romania has constantly supported the establishment of relations between the Council for Economic Mutual Assistance and the European Economic Community (the Common Market) within the authority which it has, including the signing of a framework agreement which would include the general principles for relationships between these two organizations. At the same time, our country feels that this must not affect the right of each member nation of the CEMA to solve the problems of collaboration and commercial trade in accordance with its own needs through direct negotiations with the Common Market and with the member countries of that organization. Romania has signed a number of agreements with the Common Market and is interested in expanding economic collaboration with this organization on the basis of mutual advantage.

Making a contribution to expansion and diversification of cooperation with the member nations of the CEMA and with all socialist countries and developing a wide international collaboration on the basis of unceasing respect for the fundamental principles and norms of international relations, our country is acting in full accordance with the requirements of the Romanian people for economic and social progress and is contributing fully to a strengthening of the force and influence of socialism on the world level and to the establishment of better and more just world.

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